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NEWSPAPER

# Small firm's \$99 bargains a big success

By John Gallant CW Staff

JACKSON, Miss. - By any standard, Britz Publishing, Inc. is clearly not your average supplier of software for the IBM System/38 and related minicomputers.

With three employees, including only one software designer, Britz Publishing has sold more than 1,800 applications utility packages for IBM System/ 32, 34, 36 and 38 minis in less than two years to customers such as International Paper Co., Chase Manhattan Bank, Borden, Inc., Coca-Cola Co. and even IBM itself. The tiny company, which also pub-See SOFTWARE page 8

# **Burroughs processors** beef up mid-range line

By Tom Henkel

NEW YORK - Burroughs Corp. enhanced its mid-range processor line last week with two products: a low-end addition to its A series of mainframes and a multiuser, AT&T Unix-based enhancement to its XE line of supermicrocomputers

Highlights of the announcement include

the following:

■ The A3, a three-model line of medium-range mainframes that Burroughs said competes with IBM's System/38 and 4361 products. The line consists of the Models D, F and K, which range in price from \$136,000 to \$450,000. The entry-level A3 Model D offers roughly half the internal performance of Burroughs' larger A9 mainframe. The dual-processor A3 Model K offers roughly 10% less internal performance than the entry-level A9, according

to the company.

An enhanced version of Burroughs' MCP operating system, Release 3.5, which the company announced to complement its A3 processors. The release can be used with Burroughs' A9, B5000, B6000 and B7000 series mainframes, as well as with the newly announced A3.

A series of optional modular software productivity tools that are collectively called the Interpro package (see related

story page 4).

The XE 550 multiuser system, which marks the first time Burroughs has offered a version of AT&T's Unix operating system, called Centix, on any of its products. An extension of the older XE 520, the 550 line ranges in price from \$43,000 for an entry-level configuration to \$102,855 for a large configuration. Based on Motorola, See **DEBUTS** page 4

**TOP OF THE NEWS** 

A watered-down DP crime bill was passed by the U.S. Congress and was expected to be signed by President Reagan. The bill does not address illegal entry into most private sector computers.

User concern is mounting over Prime Computer, Inc.'s bundled hardware/software maintenance policies. Page 6.

Future shock? IBM's proposed purchase of Rolm Corp. has brought under scrutiny the fate of cooperative agreements that Rolm has hatched with other vendors, such as Data General Corp.

Wang Laboratories, Inc. declared war on the office typewriter with the introduction of a low-cost microcomputer earmarked for the secretarial marketplace. Page 9.

AT&T continues to shorten its private-line order backlog, but users still agree that problems abound, and they point the finger at divestiture. Page 12.

Meeting of the lines. Digital Equipment Corp. rolled out a series of products allowing DEC users to connect to IBM's Systems Network Architecture. Page 14.

An industry association is pushing for higher Centrex services prices. The North American Telecommunications Association has also petitioned the Federal Communications Commission to prevent telephone companies from offering en-hanced versions of Centrex. Page 77.

A Virginia insurer bought 2,000 Data General Corp. laptop computers for resale to insurance sales agents. Observers, meanwhile, predict that the key to success in the laptop arena is IBM compatibility. Page 93.



#### He's Out!

Stretching for that extra measure, one analyst is using computers to manipulate statistics on every pitch and hit in major league baseball. But the San Diego Padres and Detroit Tigers relied on traditional means to reach the World Series. Story

## PRODUCT SPOTLIGHT

# Multifunction micro software plays to mixed reviews



Despite all the television advertisements and print hoopla, this year's genera tion of multifunction software packages for the

IBM Personal Computer and compatibles has found a mixed reception.

Often applauded for their power and range, the new all-in-one integrated programs, such as Ashton-Tate's Frame work and Lotus Development Corp.'s Symphony, typically combine spreadsheet, word processing, data base management, graphics, communications and other functions. Sophisticated microcomputer users are buying up thousands of the packages, but many others complain that the software is cumbersome

On the up side, some users rave about the new programs, which offer a rich variety of features, including some common commands and quicker switching between functions than stand-alone applications permit.

"I've spent an easy 1,500 hours on the program," said Guerry Simmons, a mar-

keter and financial planner with Manufacturers Financial Group in Nashville. Simmons, who uses Context Management Systems, Inc.'s Corporate MBA to build personal financial plans for his clients, enthusiastically recommended the pack age. "I use the spreadsheet, graphics, data base manager, word processing and forms management. I've left Context on [the microcomputer] for weeks and never put anything else on.

But with potential customers becoming more wary, overall acceptance of the

See LINK page 30

# Eleventh hour congressional OK for DP crime bill

By Mitch Betts CW Washington Burea

WASHINGTON, D.C. - The U.S. Congress, just before adjourning last week, passed a limited computer crime bill covering unauthorized access to computers used by the federal government, banks and credit bureaus, but not other private sector

The House of Representatives passed the new version Wednesday night, Oct. 10, as part of the anti crime amendments to the stopgap budget bill, and the Senate passed it Thursday, sending the first major computer crime bill to President Reagan, who is expected to sign the whole package into law.

Coverage of most private sector computers was stripped from the legislation (formerly H.R. 5616) in an Oct. 5 compromise with the Senate, which wanted no computer crime legislation this year, congressional aides

Congressional aides reported that Rep. William J. Hughes (D-N.J.) fought to gain Senate acceptance of the whole computer crime bill, which was passed twice by the House of Representatives [CW, Oct. 8], but that Sen. Paul Laxalt (R-Nev.) insisted more study was needed before expanding federal jurisdiction to cover private sector computers.

Cut from the legislation were felo-ny and misdemeanor charges for unauthorized access of computers used in interstate or foreign commerce where the financial loss topped \$5,000 in a year. Laxalt and Hughes ties implications of the legislation. "He is very concerned about granting broad federal jurisdiction that permits federal agents to traipse about with impunity in the data banks of individuals and corporations," the aide said.

'[Laxalt] is very concerned about granting broad federal jurisdiction that permits federal agents to traipse about with impunity in the data banks of individuals and corporations."

- a congressional aide

indicated they will hold hearings and will continue legislative work in this area next year, the aides reported.

Specifically, a congressional aide said, Laxalt wants to hear expert testimony about whether the legislative language is properly drafted so it can be enforced by prosecutors, because the U.S. Department of Justice has criticized the Hughes bill as too difficult to enforce. (The Senate did not hold hearings on the matter this

In addition, the aide said, Laxalt wants more study of the civil liber-

The latest version of the computer crime legislation would establish three forms of computer crimes under federal jurisdiction:

It would prohibit unauthorized access of a computer to obtain classified information that protects national security. This felony would carry a maximum penalty of 10 years in prison and/or a \$10,000 fine.

It would prohibit the unauthorized access of a computer to obtain financial information that is protected from disclosure by the Right to Financial Privacy Act and the Fair Credit Reporting Act. This misdemeanor provision was designed to prohibit hacking into financial and credit data bases, such as the alleged security breach of the credit files of TRW, Inc.'s Information Services Division in Orange, Calif. [CW, July 2].

It would prohibit unauthorized

access of a computer owned by or operated for the federal government, when the perpetrator knowingly uses, modifies, destroys or discloses information in that computer. Under the bill, these misdemeanors carry a maximum penalty of one year in prison and/or a \$5,000 fine.

The third provision has prompted criticism from the American Civil Liberties Union on grounds that it could allow prosecution of govern-"whistle blowers," who disclose government waste and

The Justice Department also has opposed the Hughes bill, asserting it is poorly drafted, difficult to enforce and an intrusion on state authority [CW, Aug. 20].
The Data Processing Management

Association, the EDP Auditors Association, the Information Industry Association and the American Bar Association have generally supported the enactment of some form of federal computer crime bill.

# Tell it to the hot line

Hard as we try to give our readers the most complete information available, some good news and feature stories never reach us

Are you involved in an unusual application of DP technology in your company? Have you implemented successful cost-cutting strategies? Is something in your DP shop not working as designed? Know any unsung heroes? Heard any hot news about vendors? Are you aware of technol

ogy or management trends the trade press is

overlooking?

If so, we'd like to hear from you. Computerworld has established a reader hot line for information regarding items of interest to the computation. community. Call us toll free at (800) 343-6474. Ask for Donovan White, assistant managing editor. We can't be everywhere — but our readers are.

#### CORRECTIONS

A chart accompanying "Integrated DBMS paving the way to one-stop shopping" [CW, Sept. 24] gave an incorrect figure for the percentage of DP installations planning to buy IBM's DL/1 data base management supers. The correct figure of the percent figure of the percen ment system. The correct figure is 18.7%.

The story, "AT&T inks first remarketing pact," [CW, Oct. 1] on an agreement between Ducommun, Inc.'s Data Systems Division and AT&T, incorrectly described the formation of the new tributor

Ducommun's new Data Systems Division will absorb KSG Distribution, which was a unit of Ducommun's Kierulff Electronics systems group.

### **NEWS SUMMARY**

Aiming to improve user productivity, Burroughs Corp. announced a series of six modular software tools/4

Burroughs Corp. tossed its hat into the multiuser AT&T Unix workstation ring with a high-end addition to its XE line of supermicrocomputers/5

Users of Prime Computer, Inc.'s Primos operating system are drawing battle lines over the company's hardware/ software maintenance policy/6

The proposed merger between IBM and Rolm Corp. raised questions about various cooperative agreements between Rolm and other computer companies/8

Wang Laboratories, Inc. launched an attack in the office typewriter war with its announcement of a multitasking computer designed for secretaries/9

The author of a pitch- and hit-tracking software program is working to bring computer analysis onto the baseball diamond/10

CW at Communications Managers Association: Servicing existing leased lines is proving to be as nettlesome a problem as private-line order backlogs, managers reported/12

CW at Intech '84: Digital Equipment Corp. announced a family of products that allows DEC system users to connect to IBM's Systems Network Architecture . . . Minicomputers will serve as police to patrol the growing number of micro-to-mainframe data base links, industry observers said/14.16

CW at Society for Information Management: Terminals edged personal computers as the preferred means of desktop computing for attendees interviewed . . . Office automation systems should be used as a weapon to crush competition, a Harvard University professor said ... A child's viewpoint intuitive, flexible and optimistic - is best suited for dealing with the coming microcomputer revolution, according to one speaker/18-22

M&M Mars Co. was relieved of a software company's gag order when the request was overruled in U.S. District Court/24

Academia, government and business are cooperating in a Scottish foundation's effort to develop fifth-generation software tools/34

The Israeli pavilion at Info '84 showcased national products, sought dealers and found users similar worldwide/36

The private sector must act on VDT concerns before the government does, a Columbia University professor said re-

Implementing a successful office automation strategy deals with credibility and office politics more than technology, according to a consultant at Info

A Boston law firm automated its office to give it an edge over its competitors/42 Purchasing telecommunications systems was a focal point at the recent convention of the North American Telecommunications Association/44

Explosive growth in corporate microcomputers is resulting in many innovations, a product manager said at the Express Users Group conference/45

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# Tools target productivity

NEW YORK - Claiming to have made its largest step in a decade toward making its mainframes easier to use, Burroughs Corp. last week announced a modular series of six software tools aimed at improving user productivity.

Collectively called the Interpro series, the six modules are offered to users of Burroughs' newly an-nounced A3 and older A9, B5900, B6900 and B7900 series of mainframes. The integrated packages operate under Release 3.5 of Burroughs' MCP operating system, announced here last week. The packages are said to cut the effort and costs associated with applications software development and maintenance.

The packages are:

■ Menu-Assisted Resource Control, which replaces many operational commands with menus said to guide operators in making system requests. There is no charge for this package for current users of Burroughs' MCP operating system.

■ The Interactive Datacomm Configurator was designed to establish and maintain terminal networks. By using menus included in the package, users can install a data communications network by following examples given in response to terminal descriptions and details about line protocols. The package is a no-charge item

The Screen Design Facility (SDF) is said to simplify the creation of screen forms used in on-line transaction-based applications. A variety of forms can be created automatically by using a series of menu commands. The package is available for a monthly charge that varies depending on the size of the user's main-frame. SDF costs between \$60 and \$320 per month, a spokesman said.

The Communications Manage ment System provides performance enhancements and resource conservation for transaction-processingoriented environments. Said to supboth large and small transaction-processing environ-ments, the package is available in two versions. An entry-level package, called Coms Entry, costs between \$175 and \$690 monthly depending on the system size. A more advanced Coms package costs between \$300 and \$1,265 per month.

An Advanced Data Dictionary manages the descriptions of all the information resources available on the system. It allows users to design data bases interactively to include screen forms designed with the SDF The package costs between \$125 and \$810 per month, the spokesman said.

Extended Retrieval with Graphics Output (Ergo) is an end-user-oriented package that is said to simplify the process of forming inquiries and reports. Capable of producing graphics output as well as statistical and tabular reports, the Ergo package features menu assistance and the ability to extract mainframe information for use by Burroughs micro-computers, such as the B20. The package costs \$175 to \$475 monthly,

The packages will be available in the first quarter of 1985, Burroughs

Burroughs' World Headquarters is located in Detroit, Mich. 48232.

## **DEBUTS** from page 1

Inc.'s 68010 microprocessor, the unit can support multiple attached pro-

cessors (see story page 5).
The A3 was designed to offer a miation path to users of Burroughs B1000 minicomputer. Users who install the A3 can migrate up to Burroughs' top-of-the-line B7900 series mainframes without making a soft-ware conversion, noted W. Michael Blumenthal, Burroughs chairman of

the board and chief executive officer. The entry-level A3 Model D and the A3 Model F are said to offer roughly 15% more performance than Burroughs' B5900, noted Fred R. Meier, Burroughs' vice-president, Meier, Burroughs' vice-president, program management in the Systems Product Group. The dual-processor A3 Model K is said to offer roughly 1.7 times the performance of the uni-processor models, Meier said.

The A3 is software-compatible with the Burroughs B5000, B6000 and B7000 series processors, as well as with the A9 series of mainframes.

The entry-level Model D offers from 3M to 6M bytes of main memory and has a maximum disk capacity of 750M bytes. The Model F can support from 3M to 24M bytes of main memory and can support up to 48 data communications lines. The Model F can accommodate up to 6G bytes of disk storage, Burroughs said.

The top-of-the-line Model K can support from 6M to 48M bytes of main memory and up to 96 data communications lines. The unit can sup-

port up to 6G bytes of disk storage, Burroughs said. Each model comes with up to four built-in Winchester disk drives, which offer a storage ca-pacity ranging from 122.8M to 491.2M bytes, Burroughs said.

The A3 models support an I/O data transfer rate of 3.4M byte/sec and can accommodate varying numbers of data link processors. The Model D can support up to eight data link processors, and the Models F and K can support up to 16, the company said.

An entry-level A3 Model D with 3M bytes of main memory, eight data communications lines, 500M bytes of disk storage, a streaming magnetic tape drive capable of operating at from 25 to 100 in./sec and a 650 line/ min printer costs \$136,000. Deliver-

ies are slated to begin in late October. A mid-range configuration consisting of an A3 Model F with 6M bytes of main memory, 16 data communica-tions lines, 1G byte of disk storage, a streaming tape drive capable of operating from 25 to 100 in./sec and a 1,200 line/min printer costs \$275,000. The units are set to be shipped early in the first quarter.

A top-end configuration, including Model E with 12M bytes of main memory, 24 data communications lines, 1.5G bytes of disk storage, a group code recording tape drive and a 1,200 line/min printer costs \$450,000. Systems will be available in the first quarter, the vendor said.

More information is available from Burroughs World Headquarters, Detroit, Mich. 48232.

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- 1. CW estimates based on vendor-supplied information. Performance ratings are based on an IBM 370/ 158-3 equaling 45.

- 158-3 equaling ac.
   2. CW estimates.
   3. For the processor, console, power supply and all prerequisites.
   4. Burroughs processors use data link processors in place of conventional I/O channels. Does not include a communications subsystem.

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# Burroughs XE 550 supermicro squeezes into Unix arena

NEW YORK - Burroughs Corp. tossed its hat into the congested multiuser Unix workstation fray last week with a high-end addition to its XE line of supermicrocomputers, the XE 550.

Developed for Burroughs by Convergent Technologies, Inc., the system is the first Burroughs product to offer compatibility with AT&T's Unix operating system. The XE 550 s an enhanced version of AT&T's Unix System V, called Centix, which Burroughs developed for the system.

Burroughs also announced a series of software programs that are collectively called Centresphere. The programs include administrative functions, word processing, spreadsheet, applications development, data base management and networking pack-

ages, the vendor said.

The XE 550 incorporates a series of Motorola, Inc. 68010 and Intel Corp. 80186 microprocessors and comes packaged in a cabinet roughly the size of a two-drawer file cabinet. The XE 550 can use up to three inte-grated 5¼-in. 5M-byte Winchester drives, and a disk expansion cabinet can be added to accommodate up to four extra disk drives. The external drives can have a capacity of 46.3M bytes unformatted or 37.5M bytes formatted, the vendor said.

The XE 550 is capable of distributing its work load over multiple functional processors, each of which conits own memory. processors include:

A 32-bit applications processor used to execute the Centix operating system commands. Each applications processor board contains a 68010 microprocessor with 512K bytes of random-access memory, expandable to 4M bytes. A memory management unit performs paging functions and

SR to examine a terminal case

Data processing may be facing a terminal case. Data terminals are being squeezed on the one hand by cost factors and microcomputers, on another hand by pressures for end-user computing, on still another by alternative means of data entry and manipulation. Computerworld's November Special Report will focus on data communications terminals and examine their special situation.

Contributions to the Special Report should take one of two forms: a tutorial article or an application

Articles must be typed, doublespaced and range in length from four to six pages. Artwork, such as charts, graphs and photographs, is

Authors should include a brief biography and a telephone number at which they can be reached.

The deadline for submissions to the Special Report is Oct. 22.

If you have a story you would like to tell, send it to Janet Fiderio, Special Reports Editor, Computerworld, 375 Cochituate Road, Box 880, Framingham, Mass. 01701.

offers 3.5M bytes of virtual storage per user. The XE 550 can support multiple applications processors, the

vendor said.
Other on-board processors include file processor to control the integrated Winchester disk drives and a cluster processor that offers support for RS-422 and RS-232 communications protocols. The cluster processor also allows users to attach up to 16 Burroughs PT 1500 intelligent terminals to the XE 550 system.

Tape support is provided by a storage processor that includes an Intel 80186 microprocessor and up to 768K bytes of random-access memo-The storage processor also provides memory and computing power for Burroughs' Storage Module Device controller.

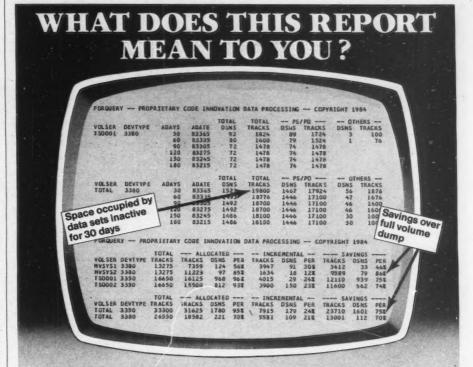
Lastly, a terminal processor is included to offload terminal I/O pro-cessing from the applications processor. The terminal processor contains an Intel 80186 microprocessor and up to 768K bytes of random-access memory, the vendor said.

Software available with the XE 550 includes: Centreword, a word processing package; Centrease menu-driven administration facility; Centrescreen, an interactive design and forms facility; and Centreplan, a

spreadsheet program.
Programming languages supported include Basic, Cobol, C and Pascal, the vendor said.

An entry-level configuration of the XE 550, including three proces-2.5M bytes of system memory, 1.5M bytes of application memory and 75M bytes of disk storage costs \$43,300. A mid-range configuration consisting of five processors, 4.3M bytes of system memory, 3M bytes of application memory and 112M bytes of disk storage costs \$75,755. A large configuration consisting of seven sors, 8M bytes of system memory, 4.5M bytes of application memory and 345M bytes of disk storage costs \$102,855, Burroughs said.

More information on the products is available from Burroughs World Headquarters located in Detroit, Mich. 48232.



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# User dispute brewing over Prime's bundling practice

By Maura McEnaney CW Staff

NATICK, Mass. — Five months after users of Prime Computer, Inc. minicomputer systems hammered out a compromise with Prime over the relicensing prices for its Primos operating system, users are getting fired up once again — this time over the company's bundled hardware/software maintenance package.

maintenance package.

According to Prime spokesman Joe Gavaghan, the company bundles system maintenance with maintenance of Primos, the operating system for Prime minicomputers because it considers Primos to be an integral part of each system. Without accepting one of the company's hardware maintenance contracts, users cannot get any Primos undates, he explained.

User dissatisfaction with the bundling policy prompted the National Prime Users Group (Npug) to write Prime requesting that company officials address the issue, said Npug President Patrick Corcoran from the Montana Power Co. in Butte, Mont. The maintenance policies and dissatisfaction with Prime maintenance have prompted some Prime users to turn to third-party or in-house maintenance.

Companies that have taken this

Companies that have taken this route include Geo-Search Corp., a seismic data management company based in Midland, Texas. The company has three Prime systems, including two Prime 750 superminis and an

older Prime 400 supermini that it uses to process geological information it supplies to the oil industry.

#### Downtime, delays

According to Mark Van Cott, manager of the computer systems division, Geo-Search, while under a Prime maintenance contract, experienced several problems, including extended periods of downtime and delayed maintenance response. Because of its remote Texas location and the resulting delays in Prime's system maintenance, Geo-Search abandoned Prime maintenance and adopted an in-house maintenance program. Today, "We have experienced virtually zero downtime," Van Cott said.

Because of its decision to drop the hardware maintenance contract, Geo-Search has been unable to acquire updates of the Primos operating system, Van Cott said. The company now runs revision 19.1 of Primos, even though Prime has released Primos revision 19.3 and users interviewed expect revision 20 to be released next year.

But the unavailability of Primos upgrades to third-party maintenance companies has left Prime users with few alternatives to Prime's maintenance. At Source Telecomputing Corp. in McLean, Va., an information utility company owned by Readers Digest Association, Inc., Director of Operations Bill Reed said his company intends to remain with Prime

maintenance for that very reason.

Asked under what conditions he would consider third-party maintenance, he said he would do so "if it were not almost impossible to put Prime on third-party maintenance and if there was a vendor that would give me the quality of service [necessary] to meet my uptime goals." Fourteen Prime 750 machines are used by Source Telecomputing, which operates an extensive network to provide users with formatted information such as financial news, electronic mail and airline guides. "The cost of maintenance and the lack of alternatives" keeps Source Telecomputing with Prime maintenance, Reed said. "Prime actually discourages third-- most underparty maintenance standably, since product and marketing is one thing and sales and service is another."

But, he said, the existence of third-party maintenance companies is a reality that computer manufacturers must face up to.

#### Dissatisfaction turned to profit

Some third-party maintenance companies claim to have profitted from some user dissatisfaction with Prime service and maintenance. In Parker, Colo., Tristan Dynamics, Inc. President Bill Sheppard said his three-year-old company, specializing in Prime computers, has more than 300 customers on contract and has done business with about 900 users.

Among those customers is Scientific Applications International Corp., a research and development company that writes scientific applications software. At the company's Denver office, DP manager and analyst Wes Parker said his firm had dropped Prime maintenance in April 1983.

Prime maintenance in April 1983.
According to Parker, the reason behind the switch was the company's limited need for hardware maintenance. Parker noted maintenance costs have dropped from about \$1,700/mo with Prime maintenance to Tristan's \$800 monthly charge, which includes \$450 that Scientific Applications puts toward a company "parts pool," Parker said.

Unable to obtain updates to the Primos system ever since it dropped Prime's maintenance contract, Scientific Applications has been working with Revision 18.3 of Primos. Revision 18.3 has been "adequate" for the company, because much of the software support is done in-house, Parker said.

The only thing that could present a problem for Scientific Applications, Parker said, is if revisions of Henco Software Co.'s Info, the company's data base management system, do not run on Primos 18.3.

For Prime, the impending discussions on the bundling issue will be treated in the same fashion as the repricing issue: "As with relicensing, we're saying, 'let's look at it first,' "Gavaghan said.

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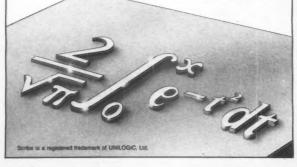
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# Policy raises resale value questions

Last May's third and, what Prime Computer, Inc. termed, final pricing change on relicensing fees for its Primos operating system has left some outspoken users and thirdparty vendors disgruntled over the resale value of some Prime systems.

Donald Shifris, president of First Solutions, Inc., a Phoenix-based broker specializing in Prime systems and equipment, said that even though he believes Primos is "probably the best operating system in existence for minicomputers ... and worth more than \$25,000," the relicensing policy has a negative impact on users who no longer need their systems. Because the used Prime machines are sold without an operating system license, used Prime systems are worth nothing more than their hardware configurations, Shifris said.

In addition, he said, the policy will likely affect potential buyers of small Prime systems as well as third-party vendors.

A 17-month battle between Prime and its users over an increase in the Primos relicensing fees ended in May, after Prime had announced three different repricing configurations. The company first increased the Primos relicensing fees in January 1983, hiking the cost of Primos for used computer systems from \$5,000 to \$25,000.

Discussions with the National Prime Users Group (Npug) led the company to unbundle the cost of the operating system in January, charging \$15,000 for the execute-only portion and \$15,000 for the operat-

ing system source code.
According to Npug President Patrick Corcoran, after an Npug survey revealed that users were more inclined to buy both the Primos execute-only portion and source code, Prime again changed the pricing structure on the operating system in May. The company's current policy is to charge \$15,000 for the Primos execute-only function, \$5,000 for the source code and \$5,000 for the utilities source code.

the utilities source code.

Because Primos carries a onetime-only license included in the
cost of the mini, the repricing applies only to used systems buyers.

#### Turning its back

By structuring its repricing the way it has, some say Prime is turning its back on a market area.

"The Primes repricing is an attempt by Prime to shut off the used market, especially on the low end," according to Joe Franz. Franz is vice-president of information services, Inc., which maintains a data base containing information on new stock issues. His firm, a subsidiary of Investment Dealers Digest, Inc., leases a Prime 750 and a Prime 2250. "Once you buy a machine, they [Prime] view any attempt to sell that machine as direct competition with their sales force," he said.

Despite these complaints, Npug and Prime officials appear satisfied with the results of the repricing discussions

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# IBM merger to impact Rolm cooperative agreements?

The proposed merger between IBM and Rolm Corp. raises the question of whether some IBM competitors will continue their cooperative agreements with Rolm.

The merger poses an interesting dilemma for Westboro, Mass.-based Data General Corp. Under a joint agreement signed last year, Rolm manufactures rugged versions of DG's Eclipse MV superminicomputers to sell to the U.S. military. The two firms have a second agreement in which DG markets Rolm's Ada software with its Eclipse machines.

Spokesmen for DG and Rolm said have no immediate plans to cancel the agreements because of the merger. "We haven't had a chance to to a formal decision," DG

spokesman Ken Donoghue said. "We'd like to continue as best we can with these agreements, but it's too early to tell."

Donoghue added that although the revenues derived from the agreements are not overly significant, DG considers its foothold in the military market very important.

Some observers questioned, however, whether either company - DG or IBM - will want to be involved in marketing a competitor's systems.

"Does IBM want to be selling [DG] computers?" questioned Anthony Langham, industry analyst and vicepresident with Prudential Bache Securities. "I'm not sure that's logical."

Other computer companies such as Digital Equipment Corp., Hewlett-Packard Co. and Wang Laboratories, Inc. have agreements with Rolm to

ensure compatibility of their system lines with the Rolm CBX, a privatebranch exchange (PBX).

Kenneth Rowe, a Rolm spokesman in Santa Clara, Calif., said his company's position is that the IBM deal will not affect the joint agreements with other firms. "It's hard to say what will happen in the future," he added. He said that when IBM first pur-

chased a 15% stake in Rolm last year, the companies were given assurances that IBM would not be privy to the arrangements between Rolm and those companies.

"There's nothing in our agreement with IBM that would force us to abrogate our agreements with other companies," he said.

As a PBX vendor, Rowe noted, "We have to be compatible with a lot of different companies' equipment,

otherwise, we're no good to our cus

Dick Harmon, a spokesman for HP in Palo Alto, Calif., said the company sees nothing in the IBM acquisition to alter its February 1983 agreement providing compatibility between HP 3000 small business computers and Rolm CBXs.

"There's no change in the agreement with Rolm because it has nothing to do with the competition," he said. "We're not buying anything from them, and they're not buying anything from us.'

A spokesman for Wang in Lowell, Mass., said the company "has no rea-son to believe anything will change" in its agreement with Rolm.

IBM announced last month that it will pay \$1.26 billion in convertible debentures to acquire Rolm.

## SOFTWARE from page 1

lishes a newsletter read by some 800 users of those machines, expects to have sold well over 2,000 packages by year's end.

Britz Publishing boasts another achievement that most microcomputer software vendors would find diffi-cult to match. The company has sold every one of those 1,800 packages for

only \$99 apiece.
And while the \$99 price tag may be an eye-catcher, the software is no gimmick. Users told Computerworld

that Britz Publishing's high-quality software packages have repaid their purchase price many times over.

If you find that hard to believe, you are not alone. George Bria, vicepresident and treasurer of Britz Publishing, said that most of the company's customers were also doubting Thomases - at least until they used the software.

'Some people find our software unbelievable," Bria said. "They cannot believe they can get something good for \$99. But we now have a number of Fortune 500 companies

that have bought five or more packages. They buy one, questioning our credibility, but they quickly find that the packages are good quality, pro-ductive, useful software. Then they begin to explore further what we have to offer. They find they really cannot go wrong.

Britz Publishing now markets five utility and applications packages for the System/32, 34, 36 and 38 that were developed by Leon Stewart, Britz's president, on the service bureau's System/34.

Britz's offerings include Indoc, an indicator documentation program;

Britz Publishina

boasts another

achievement that

most microcom-

puter software

vendors would find

difficult to match.

The company has

sold every one of those 1,800 pack-

ages for only \$99

apiece.

the Days scheduling package; the Bword word processing system; Bmail mailing list management software; and the Accounts Receivable Transactions

(ART) package. Publishing has also compiled a package of public domain grams for the IBM minis that it supplies to users for \$10

For \$99, a customer receives the the source and object code, documenta-

tion and any future enhancements. How can Britz Publishing provide all that for such a low price?

'One reason is our low overhead," Bria said. "We already had a service bureau, and we just tacked this company on in a separate room. We had the development resources available. Also, we market our products strictly by direct mail.

'We have a mailing list of more than 47,000 valid shops, from the System/32 to the System/38, to which we mail every quarter. What's more, we do not maintain any inventory. When we get a number of orders, we copy the software, print up the documentation, package it and ship it out.

What do Britz Publishing's clients think of the company's software? "I have no qualms about saying that the software is good quality, useful soft-ware that does exactly what the company said it would. I would most certainly buy another package from Britz if it met our needs," said James

Pedelty, controller for the Carroll, Iowa-based Pepsi-Cola Bottling Co.

A self-trained programmer, Pedelty initially purchased the Indoc package to aid him in maintaining and developing applications soft ware on the company's System/34. "Because of my background," he said, "I do unorthodox things. I didn't have time to produce documentation every time I wanted to make a change. So I included a run of Indoc as part of the compile process. It takes a few extra minutes, but it gives me documentation and an outline of how all the program indica-

being tors are used. For the money, I am a real believer.'

While price tag was one of the main reasons Pedelty purchased Indoc, was his satisfaction with the package that prompted him to purchase the Days scheduling ware. "We actually have four separate companies for which we do pro-cessing," he said.

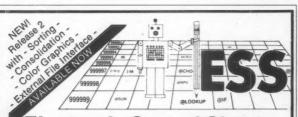
was difficult for us to keep track of all the tasks we had to perform on a monthly or weekly basis. Days has given us a continuing checklist. Although we haven't had a lot of experience with it yet, it is easy to use and works just as well as I had expected."

Pedelty's sentiments were echoed by Gary Pritchett, assistant vicepresident for the Bank of Boston's International Management Services Department.

"Based on our use of Indoc on our System/34," he said, "we would definitely buy another of [Britz Publishing's] packages. Its software is as reliable as any other software we

"Personally, I feel that automation can get just too sophisticated," Bria said. "The end user who is trying to be productive and practical can get lost in all that sophistication.
"People initially laughed at these

\$99 programs, but they soon learn that we are providing effective, productive tools that can be used imme-



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# Wang steers multitasking desktop toward secretaries

LOWELL, Mass. — Wang Laboratories, Inc. last week launched what top company officials described as its long-awaited final attack in the war on the office typewriter.

Wang's new \$2,395 Office Assistant is "the first low-cost, multitasking computer designed specifically for the secretarial marketplace," the company said.

System hardware includes 256K bytes of random-access memory, an Intel Corp. 80186 processor, one 54-in., 360K-byte floppy disk drive, a 12-in. monochrome monitor and keyboard. The proprietary multitasking operating system is bundled with word processing, typewriter emulation and forms management applications software.

The new desktop system, which looks much like Wang's Professional Computer and features much of the same hardware, struck many personal computer dealers as a low-end personal computer during its previews, according to Carmen Reitano, director of dealer marketing. But Reitano and other Wang executives insisted that the Assistant should not be viewed that way.

"The personal computer was designed exclusively for managers," Reitano said. He agreed that secretaries do use personal computers but called that setup "an unnecessary extravagance."

The 'Assistant ''doesn't cost nearly as much as a low-end personal computer,'' maintained John Thibault, director of office systems marketing. He also emphasized that the Assistant is "a complete stand-alone office system,'' offering secretaries features engineered from the ground up.

#### Multitasking feature

Among those features, multitasking permits three tasks to run concur-

IBM announces 22% profit hike in third quarter

ARMONK, N.Y. — On the strength of continued healthy demand for its high-end processors, IBM reported last week that its profits rose nearly 22% in the most recent quarter.

Profits for the third quarter ended Sept. 30 were \$1.58 billion, or \$2.60 a share, compared with \$1.3 billion, or \$2.14 a share, for the year-earlier period.

Revenues rose 13% to \$10.65 billion from \$9.4 billion for the previous year.

John R. Opel, IBM chairman, said deliveries of the company's 3080 series mainframes, 3380 disk storage devices and Personal Computer products were particularly strong.

Opel noted that quarter-to-quarter comparisons continue to be influenced by the strength of the U.S. dollar relative to foreign currencies.

For the nine months ended Sept. 30, revenues rose 15% to \$31.44 billion from \$27.28 billion from the previous year. Profits during that period increased nearly 22% to \$4.41 billion from \$3.62 billion.

rently, with two-keystroke switching between tasks. This allows secretaries to work on several jobs at once, as they do normally, Wang executives said. "A secretary usually doesn't complete one full task before going on to the next," said Robert Doretti, senior vice-president for U.S. operations.

The Assistant's word processing package is a subset of Wang's WP Plus, said to offer a menu-driven user interface, multiple word-wrap columns, automatic pagination, text highlighting and split-screen editing. The typewriter mode handles small jobs such as envelope and label data printing, Wang said. The forms mode reportedly automates the process of

filling in, editing and printing data on preprinted forms.

Optional software includes Microsoft Corp.'s Multiplan (\$195); Software Publishing, Inc.'s PFS:File and PFS:Report (\$265 for both); Graphic Communications, Inc.'s Graphwriter (\$395) and two tutorial packages (\$90). Other third-party applications could be ported to the Assistant fairly easily, but "a secretary doesn't need [Ashton-Tate's] Dbase II or every other off-the-shelf application known to man." Thibault said.

Four Assistants can share a Wang printer through a \$495 sharing device. Wang is offering a package combining an Assistant with either a 20 or 55 char./sec daisywheel printer, for \$3,395 or \$5,095, respectively. An optional second floppy disk drive is priced at \$400.

Teletype Corp. terminal emulation costs \$150, while software allowing the Assistant to act as a Wang VS workstation carries a \$250 price tag, according to the vendor.

Currently, Assistants can read files only from other Assistants, but in the first quarter of 1985 the system will be able to send and receive documents from other machines via Wang System Networking, according to product manager Richard Turner.

Additional information is available from Wang, which is located at One Industrial Ave., Lowell, Mass. 01851



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# Baseball teams eyeing software developer's pitch

By John Desmond CW Staff

CONSHOHOCKEN, Pa. — How did the four major league baseball playoff contenders take advantage of computer-aided baseball analysis? Answer: Not at all.

Which proves that computer analysis of baseball is still not needed to produce World Series contenders such as the San Diego Padres and the Detroit Tigers. But some proponents of computer-aided baseball analysis are out to change that, and one of them is Stephen Mann, president of the Baseball Analysis Co. here.

the Baseball Analysis Co. here. Mann claims to be the first baseball analyst ever employed by a major league baseball team, the Houston Astros in 1979. Traditional baseball statistics such as runs, hits, errors and strikeouts have been kept by clubs for many years, mainly for feeding to reporters and other publicity outlets. Baseball analysis involves the use of such statistics, plus information on every pitch and every batted ball, to try to improve a team competitively. "My role is to try to take advantage of the statistics to help the club," he said.

At the request of the Atlanta Braves, Mann and baseball analyst and computer programmer Peter Palmer developed a baseball analysis software program. The Braves and the Philadelphia Phillies have been using the software, dubbed Bacball, for one season. The Chicago White Sox, New York Yankees and Oakland Athletics use a program called Edge 1.000 from Pacific Select Corp..

The Bacball system breaks down data on balls, strikes, pitches, hit-ball trajectories and fielding into precise categories. The area around and including the strike zone is divided into 30 sectors, and the field is divided into 140 sectors. The data is collected by one or two observers, who note every detail of every pitch and the nuances of every play using a numeric code.

Once data is entered into the system, the software can yield such data as how many balls one shortstop can get compared to another shortstop.

how many curveballs as opposed to fastballs a pitcher throws for strikes and batter's tendencies. "This will shed light on an area virtually nobody knows about yet," said Mann of his system. "It will yield a lot of discoveries that will really have an impact on the game."

The program was written on a system running Digital Research, Inc.'s CP/M operating system and will run on systems executing the following programs: Microsoft Corp.'s Basic, Ashton-Tate's Dbase II and Micropro International Corp.'s Wordstar, Mann said. It can be supported by a micro or a mini, he added.

CRT terminals in the dugout, for instant information on the best person to pinch hit, pitcher tendencies and so on, are a long way off. "Right now, it's the front office people who are buying into this system," and not the on-the-field people, Mann said.

One front office person who has considered Mann's system is Bill Lajoie, general manager of the Detroit Tigers. Because the Tigers are in the process of moving from a time-shared system to their own computer system, Lajoie told Computerworld last week, he has no equipment now to run Mann's system. While, in his opinion, the system has merit, Lajoie says "The human element is the most important thing in baseball — how players are feeling and reacting on players are feeling and reacting on the day of the game. I'm not as excited about the system as some people. Baseball is a science, but it's not an exact science," Lajoie said.

Lajoie added, "When players feel

Lajoie added, "When players feel right, have the proper attitude and want to win, a lot of times you can throw the statistics out the window."

The impact of computers on baseball is also being felt in the Office of the Commissioner of Baseball in New York, which had its first computer an IBM System/38 — delivered in April.

According to the office's first director of data processing, Wilfredo Feliberty, the System/38's potential is just beginning to be tapped. The office has big plans for the system.

#### 'Central data base'

"Ninety percent of what's going into the System/38 is statistical base-ball data," Feliberty said. "It is not mainly for financial applications like accounts payable and receivable. It will be a central data base for base-ball information. We hope to have everything related to statistics."

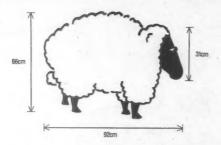
By the beginning of next season, Feliberty said, the commissioner's office hopes to have an IBM Personal Computer or compatible in the office of every major league team. Seven private lines in the commissioner's office will be dedicated to answering team inquiries. Just which micro or system will be supported and who will pay for the systems has not yet hear decided Feliberty said

been decided, Feliberty said.

Major league front offices seem to
be won over by IBM. The New York
Mets, San Francisco Giants and Kansas City Royals all use a System/34;
the Seattle Mariners use a System/
36; and the Los Angeles Dodgers have
two System/38s, Feliberty said.

Will the System/38 change baseball? "When you really start thinking of all the things that can be done with computers in baseball, there's no end to it," Feliberty said.

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# Users blame line maintenance woes on divestiture



CW AT CMA

#### By John Dix

UNIONDALE, N.Y. — Order backlogs for private lines are still a thorn in the side of communications managers, but servicing existing lines is proving to be just as nettlesome. Communications managers attending the recent eighth annual Communications Managers Association (CMA) meeting here reported a varying degree of leased-line service problems. All agreed, however, that even the

simplest line problem can potentially mushroom into a major headache.

Private lines within one state and within one Local-Access Transport Area (Lata) are the least problematic to maintain, managers reported, because they are generally provided by

a single company.

Latas are the artificial boundaries established with AT&T's divestiture to distinguish between local and long-distance traffic. The former Bell operating companies only offer services within Latas, and inter-Lata traffic is reserved for long-haul carriers.

Of all private-line circuits, maintaining inter-Lata facilities requires the most effort, managers agreed.

Trouble calls for these lines must often be reported to both the inter-Lata carrier and the local-loop or intra-Lata carrier.

#### Further complications

The situation is further complicated for circuits that cross not only Lata boundaries, but also cross into the jurisdiction of another divested Bell operating company or independent telephone company. In this scenario, a problem may have to be reported to the local divested Bell operating company, the long-distance carrier and the divested Bell operating company where the line is terminated.

AT&T's divestiture has even com-

plicated reporting problems. Where once a circuit that involved a long-distance carrier and two local Bell operating companies had a single identification number, it will now often have three.

Nightmares created by this situation include a tale told by a communications manager for a New York utility company who did not wish to be indentified. She said her company lost an inter-Lata circuit and reported it to the carrier, AT&T Communications. That company said it did not have a record of the circuit, so the service call was referred to the individual local telephone companies that handled the line at both ends. Both of those companies said they could not deal with the problem because it was an inter-Lata line. As it turned out, AT&T Communications had seemingly deleted two elements of the circuit identification arbitrarily, without notifying the customer.

The problem in this case was simple lack of communication, but it is indicative of the things that can go wrong now that there is no universal circuit numbering plan.

Another element mentioned repeatedly by conference attendees was finger pointing, where each carrier involved in a downed circuit insists the problem is the other carrier's. Finger pointing forces the communications manager to do his own problem isolation, said George R. Hallenbeck, manager of communications system technology with Emery Distribution Systems, Inc.

Ben J. Bonetti, communications manager at Michelin Tire Corp., said finger pointing is a way of life when dealing with multiple carriers.

In a speech before the CMA, Donald Procknow, vice-chairman of AT&T Technologies, acknowledged the problems CMA members face. He said they "reflect the loss of close working relationships between AT&T Communications and the [divested] Bell operating companies."

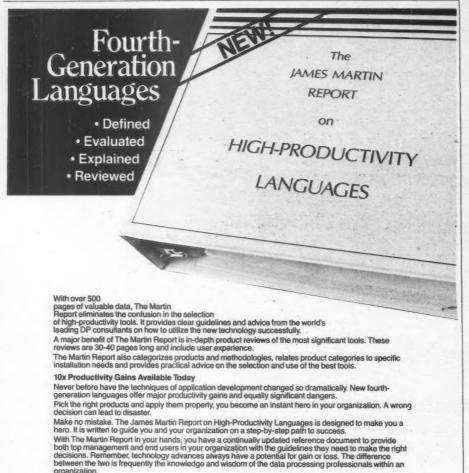
# AT&T decreases private line wait

WASHINGTON, D.C. — AT&T reported further progress early this month in reducing its backlog of private-line orders.

Past-due orders dropped from 40,000 in August to 31,000 in September, AT&T Vice-President D.J. Culkin reported to the Federal Communications Commission. Meanwhile, the company completed half of its pending private-line orders on time in September — within 48 days after receipt of the order from a customer — as opposed to completing a third of the orders in August.

Culkin also told the commission that after Nov. 1, AT&T's Midwestern region will be able to complete virtually all of its service orders within the 48-day interval.

The private-line backlog began increasing shortly after AT&T's divestiture. The number of past-due orders reached a record level, but has been dropping. The percentage of orders completed on time has increased from April's low point of 20%.



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# DEC unveils products to link DEC systems to IBM SNA



CW AT INTECH '84

By Bryan Wilkins CW Washington Bureau

DALLAS — Digital Equipment Corp. last week introduced a family of hardware and software products at the Intech '84 conference here, intended to permit DEC systems users easy connection to IBM's System Network Architecture (SNA) environment.

DEC introduced three products to interconnect DEC systems users into the traditional proprietary communications SNA protocols of the IBM product line. The products reported by bridge the vast protocol differences that exist between the products of the two computer manufacturers. The new-releases are:

■ A Distributed Host Command Facility (DHFC) that connects to IBM's own host command facility in the SNA system. The facility is said to permit IBM's family of 3270 terminals to access DEC's VAX computer system. The DHFC works through DEC's currently available Decnet/SNA gateway (PDP-11/24), a hardware/software cluster controller that will be placed between the SNA command facility and the Decnet controller. The Decnet system operates

as though it were another peripheral in the SNA system, according to the vendor.

Users with IBM 3270 terminals operating in the SNA environment will reportedly be able to access a DEC VAX system and run command and control functions in the traditional VAX VMS operating mode. Conversely, DEC terminals can access the IBM host in the SNA system.

■ Operating routines for the DEC Microvax · VMS operating system, such as remote job entry, IBM 3270 terminal emulation, application program interface and gateway network management. These functions are said to enable users to incorporate the lower cost Microvax connection

to the SNA environment.

■ A software document exchange facility for IBM's Distributed Office Support System (Disoss), which also provides bidirectional participation between the IBM and DEC environments, according to DEC.

DEC called the Disoss link "the first implementation of a direct interface to Disoss" that will enable users on a DEC system to access the final form of a document before distribution and to perform other typical library services that can be provided by an IBM 370 host supporting Disoss

WA VMS printer emulator that gives users the opportunity to print information from an IBM mainframe on a high-speed printer connected to a VAX system. The printer emulator reportedly can also be configured with a Microvax. DEC said that the emulator will permit users to transfer files for printing through a Decnet-based printer without having to use a remote batch subsystem such as JES2 or JES3 on the IBM host.

JES2 or JES3 on the IBM host.

Observers attending the Intech '84 conference uniformly agreed the introductions were of major significance. Marketing representatives of other manufacturers such as Data General Corp. and Wang Laboratories, Inc., also present at the show, said they are moving quickly to develop their own connection ports for their hardware lines in the prevalent IBM SNA processing environment.

#### Ready market anticipated

DEC's announced pricing for the new products indicate that they anticipate a ready market. The DHCF is priced at \$1,500, and prices range from \$10 to \$400 for the Microvax routines. The Disoss distributed document exchange facility is priced at \$1,500 with a Microvax version priced at \$750.

The VMS printer emulator costs \$1,000 and the Microvax version is \$200, DEC said. All products will be available this fall, DEC added.

Henry Ancona, product group manager of DEC's Office and Information Systems said the market for the DEC-IBM links announced last week was promising, because there are currently 10,000 DEC minicomputers now connected to IBM mainframes through the PDP-11/24 DEC/SNA gateway. In 1983 alone, Ancona said, DEC sold 1,300 of the units.

William Thomas, DEC director of network and communications development for the Office Information Systems said that the predominance of IBM's SNA environment and the absence of readily available IBM-sanctioned communications links to it had prompted DEC to develop its

Thomas told the Intech audience, "DEC and others are providing the upper layers of the connection into an IBM environment."

Frank Pinto, director of marketing for DG's Information Systems division, called the DEC announcements "a major new addition" that goes beyond currently available "lower end" communications links of non-IBM manufacturers to IBM products. Pinto predicted that "more products like DEC's will be coming to the market scon."

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# Micro-CPU links ushering in 'police' function for minis



CW AT INTECH '84

## By Bryan Wilkins

DALLAS — The need to connect the growing number of microcomputers to mainframe data bases will usher in a new function for minicomputers that will serve as policemen in controlling the flow of data between micros and mainframes.

So claimed several industry observers who spoke at last week's Intech '84 conference here.

As the need to access corporate data bases by an increasing number of micro users grows, on-line micromainframe applications software will prove to be inadequate for performing the job, said George Colony, president of Forrester Research, Inc. in Cambridge, Mass.

"There is going to be an evolution away from the direct on-line, micromainframe connection to a corporate resource controller between them," Colony said.

The research firm is not alone in U.S. computer manufacturers attending the conference, which was geared toward upper-level DP managers, are an indication of future direction.

Product marketing representatives from Data General Corp., Digital Equipment Corp., Wang Laboratories, Inc. and Datapoint Corp. — all minicomputer vendors — generally agreed that the marketplace is demanding some type of controller to police the links between local-area networks, between micros and shared peripherals and between micros and mainframes.

Colony dubbed the device a "distributed resources controller," a machine that would have control over the micro's access to the corporate mainframe data base. Queries for information originating at the micro level would first go to the controller to determine whether the information resides within the controller's

The researcher described the type of processing power contained within his concept of the controller as being similar to the IBM System/36 unit, or the DEC VAX class processor. Whichever manufacturer is chosen, "close architectural compatibility is implied to exist between the micros

and the controller and between the controller and the mainframe," Colony said

"Within five years, 80% of all computer program applications will be running at the [micro] level," he add-

"Minicomputers will be well positioned to deliver this higher level office automation."

James Dickie, chief of research and development at Informatics General Corp., called the movement to install departmental processors to assist the micros in their workplace a "big trend." Dickie said one of the main arguments in favor of the departmental processor is that it will free up the corporate mainframe and "support ad hoc requests made by micro users so they can have [the access they need]."

# Net to link university mainframe with students' dorms

BURLINGTON, Vt. — Administrators who were educated in an era of keypunch machines and slide rules are now implementing a communications system designed to help students access university mainframes without leaving their rooms.

The University of Vermont here is replacing its 2,000-line Centrex system with a Rolm Corp. CBX II-based integrated voice and data communications network serving 7,000 users.

The prime reasons for the change were cost control and voice/data integration. But another justification for the system, which university officials report is comparable to those used at several other schools, is that it gives students access to the school's Digital Equipment Corp. and Harris Corp. computers or to other students' computers when they plug their personal computers into RS-232 ports on their dormitory room telephones.

"We needed integrated voice and data — the opportunity to control at least part of our communications costs. We obviously don't have that now. Half of the equipment we have on campus is becoming deregulated,

and AT&T is going to be able to charge whatever they want for it," reported Arthur W. Brautigam, university communications manager.

The system, which will be installed in phases between March and November 1985, has changed in scope since the first request for proposals was issued two years ago. Those changes were a result of "the realization of our increased data needs," Brautigam said.

Staff members and students consistently have demanded greater data communications capabilities, and the university hopes to answer these demands by adding a data communications module with an RS-292 port to the Rolm electronic telephones

"We're going to start out with modules on about 15% of the phones in the system, but we're not sure what the upward boundary is for that number. You just can't know when you start talking about the number of students who will want or have to have personal computers," Brautigam said.

The 4,000 dormitory residents do not have phones in their rooms with

the current Centrex system.

With the new system, however, there will be one phone in each of the single-, double- and triple-occupancy rooms, and students will be able to order a data module for an as yet undecided fee.

The \$9 million system also will help the university to track calling volumes and control costs through

calling restriction features.
But security hazards are still un-

But security hazards are still under study, according to Brautigam.

"There are lots of [hazards]. One is finding a way to restrict access to the administrative data base [residing on an IBM 4341]. It might mean restricting telecommunications service in addition to the built-in safeguards of the administrative system," he said.

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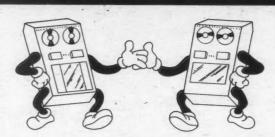
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# How does your firm put computer power on desktops?

A man-on-the-street interview at the SIM conference by CW staff writer Ed Warner



CW AT SIM

By Edward Warner

Chicago - It is the terminal over the personal computer by a good margin in an impromptu poll of attendees at the Society for Information Management (SIM) conference here. In response to the question "What means does your firm favor to put computing power on desktops?," most said terminals, for reasons that follow.



Robert Vath, director of information services, information systems department, General American Transportation Corp. Chicago:

General can is using "a combination of both, weighted towards terminals. We're a centralized operation; and we believe that support is best provided by a terminal system.

General American has about 100 terminals and 20 personal computers in use, he said.



Richard McGann, vice-president, information vices, McM Corp, Raleigh, N.C.:

mixed. We're using terminals wherever makes sense, [and]

we're using personal computers throughout our companies for either stand-alone applications in a department or direct sales aids in the field. We see two distinct purposes [for each). Right now, we support an equal amount of personal computers and terminals.



Rheta S. Pickard, managing consul-tant, Northwest Industries, Inc., Chi-

'We're terminal based. It reflects the fact that we some great

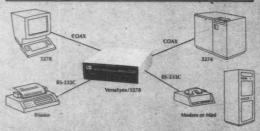
tools that are available for the main-frame. When we made the choice, personal computers weren't a viable. alternative, though I think we're go-ing to have something that has both eventually." She said 125 terminals and 20 personal computers are in use by her firm.



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Peter Mather, vicepresident, management information services, Air Products, Inc., Allentown, Pa.:
"We're going toward intelligent

terminals. Right

now, we're more terminal-based, but we see that as part of the evolution' from dumb terminals to intelligent ones. Air Products has 800 dumb terminals in use and about 400 personal computers, he said.



Carl Chanson Williams, senior vice-president and diof rector Doyle Dane Bernbach. Inc., New

"We're more terminal-based.

we're using the personal computer as a multifunctional device. It's hardwired to our mainframe, and it's [run-ning as a] stand-alone. We use it as a terminal to outside data sources." His firm, a large advertising agency, has 150 to 200 terminals and about 70 personal computers in use, he noted.



Patrick P. Irestone, director, corporate information systems, Medtronic Inc., Minneapolis: "Strategically, Medtronic,

[we favor] personal computers over terminals. As costs of

personal computers come down, we'll be implementing more of them. It's strictly a cost judgment." Medtronic uses about 350 personal computers and 500 terminals, he added.



Daniel J. Cerny, vice-president, management information services, Arvey Corp., Chi-

cago:
"Ours is more terminal-based, distributed with

systems, [though] we use personal computers for stand-alone applications that may be unique to the par-ticular division." Arvey, he said, has six divisions and is in the process of switching from a paper-based system to a system of minicomputers.

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# Professor: OA packs punch to knock out competitors

Harvard educator McFarland says time has come to switch emphasis of OA strategy



CW AT SIM

By Edward Warner CW Staff

ROSEMONT, III .-Harvard University Business School professor who is spearheading the introduc-tion of micros for the school's graduate students urged the roughly 300 people attending the Society for Information Management (SIM) conference here to use office automation systems as a weapon to crush competitors

In a keynote speech highlighted with humor, Prof.

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Warren McFarland, Harvard Business School's expert on information management corporations should switch their information systems strategy from one of stamping on mice, or performing clerical tasks, to one of hunting for elephants, or getting the edge on industry competitors. "And there are a lot of elephants out there," he warned.

To illustrate, McFarland noted the case of American Hospital Supply Corp., which has installed order-entry terminals at many of its customer hospitals. The terminals offer the hospitals speedy, telephone-free ordering, in-cluding the capacity for emergency orders that can be

filled in 24 hours, the educator noted.

The terminals also tie the hospitals to one supplier, a situation which, he said, competitor Johnson & Johnson painfully discovered when it tried to offer those hospitals a terminal orderentry system of its own. The hospitals refused, McFarland said, and Johnson & Johnson found that "the first one in [with new technology] is the winner.

He also called on MIS executives, a large portion of his audience, to work in closer cooperation with their corporations' strategic planners to achieve the competitve use of information technology.

McFarland said computer technology can be used to erect a barrier to block competitors in a market. Other competitive uses include strengthening relationships with customers or suppliers and changing the intra-in-dustry balance of power or its basis of competition.

#### Move ahead with strategy

Should only one of those opportunities exist for a corporation, he said, then it should move ahead with that competitive information management strategy.

For an example of how one corporation used terminals to strengthen its existing customer relationships, McFarland pointed to a maker of large, lighted signs that installed terminals in the offices of its major customers.

The terminals allow the customer to call the sign maker's central computer and determine the progress of the ordered sign. They also permit the customer to leave an electronic message. The object was "to try to get [the customer] habitually reliant on the company's kind of services

fice automation technology changed one firm's relationwith its suppliers, McFarland singled out a ma-

and this is Ralph's computer room.

jor aerospace manufacturer, which he did not identify, and said the firm had informed its suppliers of what brand and model of computer-aided design terminals it used. The aircraft maker now downloads the specifications for needed parts to its suppliers' terminals as those parts are designed.

While competitive use of computer technology can help a firm become an indusleader, McFarland warned that information managers must also keep an eye on the technology itself, lest theirs become obsolete.

The manual typewriter, he said, has been completely re-placed by the electric typewriter, which itself will soon be replaced by the word processor. Even in word process ing, big changes are on the horizon, he said, claiming that voice-actuated word processing systems with 98% accuracy for all spoken words are only a year away from the market.



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# Psychological stumbling block mires micro revolution



CW AT SIM

By Edward Warner CW Staff

CHICAGO As Prof. Richard Byrne tells it, children may be the best people to turn to when a microcomputer crashes. Many children are more adept with microcomputers than adults because all children rely on intuitive thinking and have a vision of the world that expects everything to work, the former college dean said.

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of the Society for Information Management here last week contrasted the attitude of children with that of adults, who, he said, think rigidly and "expect things to break." The two viewpoints, he said, represent the right and wrong ways of looking at what he called the coming microcomputer revolution

The greatest problems in managing that revolution will be psychological ones, such as nurturing confidence in executives who "are afraid of uppity machines," he added. Byrne, a professor at the Universi-

ty of Southern California's Annenberg School of Communications, said executives also fear dealing with uning their ignorance in such areas. MIS managers, especially, he noted, have to "look like you know or [like] you know somebody who knows.

To deal with the hazards these fears pose for the integration of microcomputers in corporations, Byrne suggested that a buddy system be set between the group he claims has the greatest fear of micros — those between ages 42-56 — and those engaged in the most childlike love affairs with micros — usually the youngest employees. "You ought to be building teams with young hot-shots," he said, "They know everything about micros, but they don't

Byrne, who claims to have taught microcomputing to 1,500 computer-phobic executives, said the young hot-shots were like the driver of the boat and the older executive like the water-skier. "They're going to tow you around the lake." he said.

Byrne also urged executives uneasy about micros to be willing to be ignorant and to be conscious. Consciousness is important, he said, because it forces one to notice things, such as new microcomputing applications. "Confidence is the mortal enemy of consciousness," and so one must keep trying new, riskier approaches to keep one's consciousne high, he said. A willingness to admit ignorance is useful, he continued, because it is the first step in learning.

Byrne also advised the informa-tion managers to "leverage what you're best at" when incorporating micros. Micro software, particularly, should be used to enhance something the organization already does well, not something it is having difficulty with, he said. Technology tends to magnify both problems and success-

es, he argued.

Failure to get organized before incorporating microcomputers is like sitting on top of a rocket and igniting it, he said. "You want to be sure [the rocket] is pointed toward a door." Byrne added two final pieces of advice for the roughly 300 information managers in attendance. "Come from mastery," he said, defining mastery as approaching problems with confidence. And, he added, "Come from aliveness." with a sense of vitality.



BALTIMORE "The World of Electronic Data Interchange — 1984" is the theme of the Transportation Data Coordinating Committee's 16th National Data Systems Forum and Exhibit to be held Nov. 28-29 at the Baltimore Convention Center here

The forum is aimed at businesses that interchange data for purchasing, invoicing, bills of lading, freight billing, tariffs, public warehousing transactions, claims filing and other application areas, the sponsors said.

Speakers will address how electronic data interchange (EDI) is being used in business today and will offer forecasts for electronic transactions in 1985 and 1986. The need for progress in the field of transportation/ distribution tariff data standards for rating, routing and payment will be emphasized, the sponsors said.

Sixteen technical clinics will also be presented on subjects including an introduction to EDI, software, railroads and shippers, motor carriers and shippers, communications, thirdparty support and micros.

The registration fee for the Forum and Exhibit is \$295, according to the sponsor. More information is available from the Transportation Data Coordinating Committee, 1101 17th St. N.W., Washington, D.C. 20036.



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# COI request to gag M&M Mars denied by district judge

NEW HAVEN, Conn. — U.S. District Judge Ellen B. Burns rejected a request by Creative Output, Inc. (COI), a software company in Milford, Conn., for a gag order on the M&M Mars candy division of Mars, Inc., which is suing COI over the alleged failure of a program to function as claimed.

COI sought to bar M&M Mars, a maker of candy prod-ucts, from talking to the press through lawyers and the public relations firm of Hill & Knowlton, which M&M Mars had retained.

Judge Burns rejected the gag order requested by COI on September 17 and stated that "the court finds no serious threat to a fair trial for [the] defendant [COI]. The publicity has been in trade papers, unlikely to reach potential jurors.'

Burns' opinion stated that Hill & Knowlton "had been hired many years ago and, with respect to the present litigation, has been asked to make this case public only in an effort to discover what experience other customers of the defendant have had with Optimized Production Technology [OPT] software."

#### propriate to com

Dion Moore, the attorney representing COI, last week said it would be inappropriate to comment on the litigation and the judge's order re-

jecting the gag on M&M Mars. M&M Mars attorneys have sought to contact other COI customers to ascertain their experiences with the OPT software programs.

COI had also requested a court order barring these attempts by M&M Mars, which Burns also rejected with the

gag order. 'The defendant's principal objection to the publicity of this litigation and the plaintiff's letters to the defendant's customers is the potential adverse impact on OPT in the marketplace. COI has not documented any such impact, but, even if it had, market pressures alone cannot justify restrictions on [the] plaintiff's First Amendment rights or those of its counsel, ' Burns said in the ruling.

Since the two sides in the case have been unable to agree on a protective order that would guard OPT source code while it is being examined by M&M Mars, Judge Burns' court last week threatened to issue its own "setting forth the terms and conditions under

## Precedent-setting ruling

Last May [CW, July 9] Burns ordered COI to turn over to M&M Mars lawyers the source code for OPT in what patent attorneys believe was a precedent-setting ruling requiring disclosure of the proprietary inner workings of a product.

M&M Mars filed suit against COI in 1983. The suit alleged both breach of contract and fraud in connection with the delivery of the OPT

which the OPT code shall be software program.

disclosed." M&M Mars alleged that COI had stated it could develop an OPT program that would work effectively and be suitable for the continu-ous-flow manufacturing process used in the production of nougat, an ingredient in some of Mars' candy products. M&M Mars attorneys alleged that after delivery of the OPT program it became apparent that "the technology would never work in a continuous-flow setting because of an inherent incapa-

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# Intelec'84 set for Nov. 4

NEW ORLEANS - Adja cent to the site of the 1984 World's Fair, the Intelec '84 technical session will address the impact of emerging communications technology on energy systems from Nov. 4-7 at the New Orleans Hilton Hotel.

W.M. Miller of Lorain Products Corp. and J.M. Fletcher of AT&T Technologies are cochairmen of the ession. Issues to be addressed include generation, conversion, distribution and use of power for telecommunications applications.

More than 100 technical papers will be presented, and a number of manufacturers will display products. Conference registration is \$200 for members of the Institute of Electrical and Electronics Engineers by Sept. 28 and \$225 thereafter. For non-members, the fee is \$215 in advance and \$240 at the ses-

More information is available from R.R. Garreau, AT&T Technology Systems, Gateway II, Room 1806, Newark, N.J. 07102.



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If you have a responsibility for information management in your organization, we encourage you to attend one of the 700 Cullinet Seminars scheduled internationally. You'll find the Fall/Winter schedule on the following page.





## Federal officials plan automated driver file

WASHINGTON, D.C. — U.S. Department of Transportation (DOT) officials recently announced plans for fully automating the 24-year-old National Driver Register so that officials in one state can quickly determine if a license applicant has a bad driving record in another state.

DOT said it now stores de-

tailed state reports of suspended and revoked driver's licenses in a central computer file and then mails the information to states upon request — a process that takes up to two weeks.

The new system, which will require states to upgrade their computer systems, will improve the response time by using data communications to send a summary report showing the states that have "adverse reports" on a driver

To mitigate the privacy concerns about having a national data base, the detailed driving records will be stored only in each state's computers, where they can be retrieved by a requesting state.

The new system will be tested in four states next year in preparation for nationwide conversion by 1988, as ordered by Congress, DOT said.

# DOD to conduct survey to assess DP security

WASHINGTON, D.C. —
The Department of Defense plans to conduct a survey of 2,500 military contractors handling classified data to assess the computer security of their data processing operations, according to documents recently obtained from the department.

The survey, to be conduct-

ed this year by the department's Computer Security Center (CW, Sept. 17), is part of Defense Secretary Caspar W. Weinberger's effort to upgrade computer security at military installations and contractor sites.

In a Jan. 12 memorandum, he ordered a thorough review of military computer security and the preparation of policy recommendations "to ensure that security measures keep pace with the anticipated expansion of automated information systems ... in the late 1980s and bewond."

# Congress OKs military software upgrade

WASHINGTON, D.C. — Congress recently gave final ap-

proval to legislation encouraging the U.S. Department of Defense to upgrade the computer software used at its procurement centers so it can spot overcharges on spare parts.

Sponsored by Sen. Jeff Bingaman (D-N.M.), the measure was prompted by reports that much of the procurement software is outdated and cannot produce price-variance reports that highlight large price increases [CW Sent 3]

highlight large price increases [CW, Sept. 3].

The provision, which specifically requires the Pentagon to produce a Computer Capability Improvement Plan, was included in the final version of the Defense Authorization Act for fiscal 1985. The measure was approved by the House on Sept. 26 and by the Senate on Sept.

# Courses to aid in OA plans

SARANAC LAKE, N.Y. — The American Management Associations (AMA) is offering a series of courses designed to aid managers in assessing, developing and implementing office automation (OA) strategies.

Titled "Automating the Office: A Tactical Guide for Success," the courses are scheduled to be held at the AMA Management Center in Chicago Oct. 22-24, at the Amfac Hotel in Los Angeles Nov. 7-9 and in New York Dec. 10-12. No meeting place has been assigned for the New York course dates.

A spokesman for the AMA said the course is designed for upper management and DP and MIS executives who have already begun OA efforts.

The course will include an overview of the technical, financial, political, organizational and functional considerations of a successful OA implementation. OA tools for text and document production, word processing, data manipulation, analysis and decision support, communications, networking and messaging will be reviewed in addition to an OA vendor overview.

The cost to attend the courses is \$695 for AMA members and \$800 for non-members. Information may be obtained from AMA, P.O. Box 319, Saranac Lake, N.Y. 12983

# Wanted: Software stories

"Off-the-shelf" applications software is here to stay. January's Special Report will take a look at applications software packages and their increased use in the marketplace today.

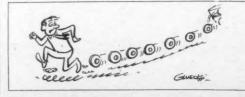
We will look at how applications packages are being marketed and where they are being used.

Contributions to the Special Report should take one of two forms: a tutorial article, discussing an issue or trend or an applications story, outlining a particular user firm's experience.

Articles must be typed, double-spaced and range in length from four to six pages. Artwork, such as charts, graphs and photographs, is also welcome.

Authors should include a brief biography and a telephone number at which they can be reached. The deadline for submissions is Nov. 5.

If you have a story to tell or any questions to ask, send them to Janet Fiderio, Special Reports Editor, Computerworld, 375 Cochituate Road, Box 880, Framingham, Mass. 01701.



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coupon below.

Albany, NY Nov. 14	Dublin, Ireland Nov. 13	Miami, FL Nov. 15	Rochester, NY Nov. 14	Tampa, FL Nov. 27
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Amarillo, TX Dec. 6	W. Germany Oct. 18	Midland/Odessa, TX Nov. 1	St. Louis, MO Nov. 7	Toledo, OH Nov. 1
Appleton, WI Dec. 12	Düsseldorf,	Milwaukee, WI Nov. 1	St. Louis, MO Jan. 16	Toronto, ON Nov. 20
Atlanta, GA Nov. 7	W. Germany Nov. 7	Milwaukee, WI Jan. 10	San Diego, CA Oct. 18	Toronto, ON Jan. 17
Augusta, GA Oct. 23	El Paso, TX Nov. 7	Minneapolis, MN Dec. 4	San Diego, CA Dec. 11	Ventura, CA Jan. 15
Austin, TX Oct. 17	Ft. Wayne, IN Dec. 5	Mobile, AL Oct. 18	San Francisco, CA Oct. 17	Waco, TX Oct. 18
Birmingham, AL Nov. 8	Genf. Switzerland Dec. 6	Mobile, AL Dec. 12	Savannah, GA Dec. 14	Waco, 1A Oct. 18
Birmingham, AL Jan. 10	Glasgow, Scotland Nov. 22	Montgomery, AL Nov. 1	Seattle, WA Dec. 6	Washington, DC Nov. 20
	Greensboro, NC Nov. 1	Montreal, PQ Nov. 1	Singapore Nov. 22	Willmington, DE Oct. 25
Birmingham, England . Nov. 21	Greenville, SC Nov. 14	Montreal, PQ Nov. 7	South Bend, IN Nov. 16	Winnipeg, MB Jan. 15
Boise, ID Nov. 7	Greenville, SC Jan. 9	Morristown, NJ Jan. 9	Springfield, IL Oct 17	Wichita, KS Dec. 6
Boston, MA Dec. 5	Hamburg, W. Germany , Nov. 8	München.	Stamford, CT Oct. 16	Woerden,
Boston/Braintree, MA Jan. 8	Harrisburg PA Nov. 14	W. Germany Oct. 24	Stamford, CT Jan. 17	The Netherlands Nov. 22
Bremen, W. Germany . Oct. 18	Indianapolis, IN Nov. 20	München.	Stockholm, Sweden Dec. 3	Woodbridge, NJ Oct. 17
Brussels, Belgium Oct. 31	Indianapolis, IN Jan. 8	W. Germany Nov. 6	Stuttgart, W. Germany, Oct. 23	Worcester, MA Oct. 16
Brussels, Belgium Nov. 27	Kalamazoo, MI Nov. 7			York, PA Dec. 19
Brussels, Belgium Dec. 5	Kansas City, MO Nov. 28	Nashville, TN Jan. 16		Zürich, Switzerland Dec. 4
Buffalo, NY Jan. 16	Kansas City, MO Jan. 17	New York, NY Nov. 7		
Calgary, AB Jan. 16	Kiel, W. Germany Oct. 17	New York, NY Jan. 15		CW10154
Cedar Rapids, IA Oct. 16	Knoxville, TN Nov. 15	New York/	"Yes, I'd like to attend a Cu	
Chattanooga, TN Dec. 6	Köln, W. Germany Oct. 25	Long Island, NY Jan. 8	Please enroll me in the	(DATE)
Cherry Hill, NJ Jan. 9	Kuala Lumpur.	Oklahoma City, OK Nov. 13		(DATE)
Chicago, IL Nov. 8	Malaysia Nov. 20	Omaha, NE Jan. 9	Cominge in	
Chicago, IL Jan. 8	Leeds, England Nov. 14	Orlando, FL Dec. 6		TY)
Cincinnati, OH Nov. 8	Lincoln, NE Dec. 11	Orange County, CA Nov. 13	Name	
Cleveland, OH Nov. 7	London, England Oct. 23	Ottawa, ON Nov. 15		
Colorado Springs, CO . Nov. 28	London, England Nov. 20	Ottawa, ON Jan. 15	Title	
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Columbus, GA Dec. 4	London, England Dec. 4	Philadelphia, PA Nov. 29	Company/ Department	
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Robert P. Marovich, VP and Controller **Avionics Group** Rockwell International Corporation

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# NonStop Transaction Processing

	Alpha Software Corp. Burlington, Mass.	Ashton-Tate Culver City, Calif.	Context Management Systems Torrance, Calif.	Cullinet Software, Inc. Westwood, Mass.	Innovative Software Overland Park, Kan.
Package	Electric Desk	Framework	Corporate MBA	Goldengate	Smart Software
Minimum memory recommended (in kilobytes)	256	384	384	320	256
Hard disk required?	No	No .	No	Yes	No
Major applications	WP, DBMS, spreadsheet, communications	WP; DBMS, spreadsheet, graphics, forms processing, outline generator, communications	Spreadsheet, graphics, WP, DBMS, forms management, communications	WP, DBMS, information management, spreadsheet, graphics, communications	DBMS, WP, spreadsheet graphics
All applications in memory simultaneously?	Yès	No	No	No -	No .
Max. no. of windows on-screen	Split-screen	Unlimited	4	Split-screen	25
Ability to write macros?	Yes	Yes	Yes	Yes	Yes
Dynamic updating of data between applications?	No	Yes	Yes	Limited	No
Multitasking?	No	No	No	No	No No
Combined text/graphics output?	No	Yes	No	Yes	Yes
Data exchange between applications done on-screen?	Yes	Yes	Yes	Limited	Yes
Data-importing formats	Ascii	Ascii, Dbase II, Dbase III, 1-2-3	Ascii, DIF, Dbase II, Wordstar, Sylk subset	Ascii, DIF, Dbase II	Ascii, DIF
Max. fields/record Max. records/file	50 64K	Limited by hardware	95 32K	255 32K	255 100K
Relational data base manager	No	No	No	Yes	Yes
Sorts by how many fields?	100	1	6	Any number	15
SPREADSHEET Max. size, rows by columns	255 by 255	Limited by hardware	999 by 95	2,048 by 256	999 by 9,999
No. of built-in spreadsheet functions	20	159	36	Over 50	Over 60
Number of chart types	None	6	9	12	10
"What-you-see-is- what-you-get" word processing	Yes	Yes	. No	Yes	Yes
Enhanced communications features	Supports two simultaneous communications sessions	Xmodern batch transfers, multiple protocols	Full duplex, transmission of any part of work space	Information link to Cullinet's Information Database on mainframes	No communications
Terminal emulation	-	2 2 2 3	IBM 3278	IBM 3270	
Price	\$345	\$695	\$695	\$795	\$895

## LINK from page 1

new software has not reached industry expectations, experts say. Sales remain far below those of star products, such as Lotus' Development's 1-2-3.

"While we're finding that the new products are moving to the cash register, 1-2-3 still absolutely outsells them," said Margaret Rodenberg, manager of product management for Entre Computer Centers in Vienna, Va. "We're selling much more 1-2-3 [in relation] to Symphony than we had anticipated," said Anthony Morris, president of Morris Decision Systems, Inc. of New York.

And the reaction in many large organizations has been lukewarm. "We're not very enthusiastic," said a manager responsible for personal com-

puters at a multinational bank who has evaluated the new crop of software. "Symphony is a technical success but an artistic failure. Framework seems to be a promising product, but it was rushed to market to meet that hypothetical July 1 ship date."

"We have no particular desire to go into Symphony," said Ray Barron, information center manager at Michigan Consolidated Gas Co. in Detroit. "People don't have a major call for transferring data between programs, and some of the [Symphony] programs are a little weak."

Other executives agreed that the packages must overcome several major stumbling blocks before achieving widespread acceptance.

Leading the obstacles list is the sheer difficulty many users encounter in trying to find their way around these complicated programs. "I've talked to people who really don't know where to begin," said Thomas Billadeau, president of Office Sys-

The charts above represent a sampling from the multitude of integrated micro software packages currently available running IBM's PCDOS or Microsoft Corp.'s MS-DOS. With the exception of Lotus Development Corp.'s 1-2-3—the first integrated package to reach wide-spread acceptance—all the products listed above first shipped within the prest six months.

above first shipped within the past six months.

While some packages run on a 256K-byte personal computer with floppy disk drives, 512K bytes and a hard disk drive are strongly recommended.

Multitasking is defined here as true concurrent operation, with background tasks running simultaneously. Although PC-DOS and MS-DOS are single-tasking operating systems, the Software Group claims that its Enable package offers true multitasking.

In "what-you-see-is-what-you-get" word processing, the screen displays document pagination and text characteristics to the extent that the personal computer hardware allows.

Innovative Software, Inc.'s Smart Software is offered either as independent modules or as a combined package and can be viewed as an all-in-one package or as a product family.

tems Consulting Group in Cambridge, Mass. Several software training firms encourage first-time Symphony users to jot down notes on paper to remind them where they are and where they have been.

"All-in-one" functions often compete at a disadvantage with dedicated stand-alone applications. "No one vendor is going to produce the ultimate

application of each type," one user commented. "It's ludicrous to think that one vendor can be all things to all people."

Meanwhile, other forms of integrated software
— families of compatible applications and operating environments that provide a common interface
for stand-alone programs from various suppliers
— may offer many of the same advantages (see
related story page 32).

In addition, the first releases of all-in-one products may lack the polish and the completeness of stand-alone packages that have been fine-tuned for a year or two

for a year or two.

In one case, Wendy Lotz, analyst in technical services at Smith Barney Harris Upham Co. in New York, initially gave Softrend, Inc.'s Aura high marks. But she later found that her copy did not work with her letter-quality printer, was limited in report size and did not import or export files from other programs. While she expected later releases to clean up these problems, she shelved the program. "Overall, the product was great, but the little things turned into major things," she summed up.

Most packages also are copy-protected and sold on a one-package-per-machine basis, which severely discourages their use in local-area networks.

Other potential obstacles for all-in-one micro software seem more minor. The new integrated packages typically demand 512K bytes of random-access memory and a hard disk drive to run comfortably, but many companies already are making such configurations standard. And while the software typically carries price tags between \$500 and \$800, the cost per function works out to less than \$150, and pricing is not seen as critical.

The integrated packages typically feature on-

	NTEGRATED SOFTWARE PACKAGES FOR IBM PERSONAL COMPUTERS AND SELECTED OTHER MICROCOMPUTERS					
	Lotus Development Corp.	Lotus Development Corp. Cambridge, Mass.	Peachtree Software, Inc. Atlanta, Ga.	Softrend, Inc. Salem, N.H.	The Software Smup Ballston Lake, N.Y.	
Package	2. 1. 2. 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Symphony	Decision Manager	Aura	Engole -	
Minimum memory recommended (in kilobytes)	192	320	256	256	256	
lard disk required?	No	No	No	No	No No	
Major applications	Spreadsheat, graphics, information management	Spreadsheet, graphics, WP, DBMS, communications	WP, E6MS, spreadsnoot, communications, graphics	Applications development, WP, DBMS, spreadsheet, graphics	WF, DBMS, spreadshoes, graphics, communications	
All applications in memory simultaneously?	Yes	Yes	No	No	No	
Max. no. of windows	None	Unlimited	10	None	8	
Ability to write macros?	Yes	Yes	No No	Yes	Yes	
Dynamic updating of data between applications?	No	Yes	No	Yes	Yes	
Multitasking?	No	No	No	No	Yes	
Combined text/graphics output?	No	No	No	Yes	Vas	
Data exchange between applications done on-screen?	No	Yes	Yes	No	Yes	
Data-importing formats	Visi Calc, Dbase II, DIF	Visi Calc, Dbase II, DIF, 1-2-3, Wordstar	Ascii, Peachtext 5000	Dbase II, 1-2-3, Ascii, Wordstar	Ascil, 1-2-3, DIF, Dissail Wordstar, Volkswriter, Easy-Writer I	
DEMS Max. fields/record Max. records/file	256 2K	256 8K	00 828	256 Limited by disk capabilities	32 Dver B4K	
Relational data base manager	No	No	No	No	Yes	
· Sorts by how many fields?	2	3	3	9	8	
SPREADSHEET Max. size, rows by columns	2,048 by 256	8,192 by 256	254 by 63	255 by 63	255 by 255	
No. of built-in spreadsheet functions	Over 50	Over 50	23	Over 50	Over 50	
Number of chart types	5	8	10	6 plus customized diagrams	100	
"What-you-see-is- what-you-get" word processing	No	Yes	No	No	Yes	
Enhanced communications features	No communications	Quick switch from application to communications sessions	M unframe line	W/Aura Comm option: unattended file transfer; ability to send, receive and print simultaneously	Electronic mail, data editing during transmission automatic buffering of incoming data	
Terminal emulation			IBM 3278	W/Aura Comm option: IBM 3270; Digital Equipment Corp. VT100, VT52	- 4	

disk tutorials, menu interfaces, Help screens and other standard-vanilla state-of-the-art micro software features.

Price

Beyond these common attributes, there is tremendous variation among packages, and customers can consider their demands for time manage ment functions, application and report generators, password protection, mouse interface devices, terminal emulation and other entries on an extensive

One critical concern is the integrated package's ability to import and accept files from other programs. Andrew Langlois, corporate director of MIS at Moore McCormack Resources, Inc. in Stamford, Conn., noted that 1-2-3 "has been a tool that has been so widely understood, I want to get things into Lotus so that people can manipulate

Naturally enough, other specific features appeal to different users.

Symphony's powerful command language has drawn much attention, but users often consider the availability of word processing more impor-

"I like the word processing very much; it's very simple to get into and use," Langlois said. "I'm not quite as pleased with the data base." Symphony's

spreadsheet is excellent, and communications are "very straightforward," he said.

When Symphony came out, "we upgraded most of our copies of 1-2-3 and bought replacements,"
Langlois added. "It was a natural move for us. We have 80 [personal computers], and virtually everyone has 1-2-3."

Within Framework, "it is easy to consolidate and view different files; one is not limited to a single spreadsheet as in Symphony," said David Ferris, chairman of Ferrin Corp., a San Francisco

# Integration's roots

This year's all-in-one packages have varied

Prime among them are projects at Xerox Corp.'s fabled Palo Alto Research Center and other R&D facilities; a late-1970s Booz, Allen & Hamilton, Inc. management study, which identified exactly the five major functions incorporated in Lotus Development Corp.'s Symphony and most of its kin; an early crop of multifunction packages that began to spring up two years ago, with Context Management Systems, Inc.'s Context MBA the highest profile offering; Visicorp's Visi On software, which drew tremendous interest when displayed in early prototype form at the Comdex/Fall 1982 show; and Apple Computer, Inc.'s Lisa computer.

Most application developers writing for the

Most application developers writing for the IBM Personal Computer and other machines running Microsoft Corp.'s MS-DOS, however, took their point of departure from Lotus' 1-2-3. First shipped in January 1983, 1-2-3 combines a powerful spreadsheet with limited graphics and data management functions. Although most people concentrate heavily on the spreadsheet features, Lotus emphasizes the integration features. tegration features.

consulting group. Framework also "is word-oriented and enables one to organize thoughts with an outline processor," Ferris noted. "That seems to be the way most people work.'

The Software Group claimed its Microsoft Corp. MS-DOS-based Enable is unique in offering true multitasking capabilities. A central supervisory module reportedly contains functions common to all applications and isolates applications from the operating system. This permits Enable to "treat MS-DOS as a serial resource" and to run up to four tasks concurrently, said Robert Hamilton, the firm's vice-president of development.

The importance of multitasking "is a function

\$495

of who's at the keyboard," Hamilton said. "If you deal with on-line services a great deal or do an awful lot of printing, it's really going to be

Cullinet Software, Inc.'s Goldengate is among the packages boasting a micro-mainframe link. In Goldengate's case, the program can be tightly linked to Cullinet's Information Database on an IBM mainframe, providing access to mainframe DP and storage capabilities, electronic mail and data sharing with other personal computer users

Preparing to install Goldengate along with Cullinet mainframe software, Williams International Corp. of Walled Lake, Mich., expects the integrated micro package to work as well as stand-alone packages, according to micro manager Gregory Enders. "We don't expect it to be a super data base, but we do expect the spreadsheet and graphics to be at least as good as what we've got."
Enders also noted that the mainframe should ' like drive D," storing information absolutely transparently to Goldengate users.
Softrend's Aura is a "data-base-centered appli-

cation generator with a dozen major capabilities beyond what Framework and Symphony can do," Company President David Wetherell claimed earlier this year. One of these capabilities allows

See LINK page 34

# Integrated micro software gains popularity with users



Microcomputer software integration comes in more flavors than does Baskin-Robbins' ice cream. Users can plow along, as most do, with stand-alone products. They can select a product that combines one strong application with limit-

Samna+ from Atlanta's Samna Corp. They can buy a six-pack ali-in-one package. They can turn to application software product fam-ilies (such as the PFS: series from Software Publishing, Inc. of Mountain View, Calif.), which typically provide some common commands and simplify data-exchange pro dures, but which are not as tightly coupled as all-in-one packages.

Or they can combine stand-alone programs under operating environment software, which most observers pinpoint as the strongest trend in micro software development because it does not restrict users to products from a single vendor.

This brand of software — also described as window managers or systems integrators — extends the operating system, permitting ap-plications from various software vendors to share files and a common user interface, with a high degree of integration available if the developers respect the environ-ment's conventions.

The approach offers "a wealth of advantages," said Robert Rudkin, corporate manager for office

automation at Diamond Shamrock Corp. in Dallas. In particular, Rudkin endorsed the benefits of Quarterdeck Office Systems, Inc.'s Desq package, which is designed to accommodate existing software.

All-in-one software vendors who insist on "focusing on their own version of a spreadsheet or their own version of a word processing package are too narrowminded," Rudkin maintained. "With [Lotus Development Corp.] 1-2-3, you've got your three functions. With [Lotus] Symphony, now you've got six of them, but you still have the same problems. Desq opens the architecture and puts hooks in so you can pull in data from outside."

IBM's Topview, Microsoft Corp.'s Windows, Digital Re-search, Inc.'s Concurrent PC-DOS (a complete operating system) and other offerings also reach for this goal in different and conflicting

goal in different and conflicting ways. And they will represent direct competition for all-in-one packages, observers agreed.

"All the hype is for integrated packages, but there's no great demand," one microcomputer manager remarked. "People don't need combinations of applications that are not each the best of their kind. Systems integration makes a lot of sense. I'm very high on Concurrent PC-DOS; you can run all of your se-PC-DOS; you can run all of your selected software, and it's a true multitasking system."

multitasking system."
All-in-one users "must live with
the constraints of multiple appli-cations, none as good as stand-alone products despite what the
vendors say," commented Thomas
Billadeau of the Office Systems
Committing Group, Products such Consulting Group. Products such Consulting Group. Products such as Topview "may emerge as the way to combine applications, and products like Symphony or [Ashton-Tate's] Framework may be pigeonholed into vertical places where there are very defined needs," Billadeau predicted.

"There is a possibility of peaceful coexistence," said Laura Hoffman, marketing vice-president at the Software Group. But, she added, "I don't think the user is wise to start with a windowing envi-

to start with a windowing envi-ronment and then add other prod-ucts," particularly before any such environments become stan-

With integrated products such as the Software Group's Enable, as the Software Group's Enable, "you have state-of-the art pro-grams, but you don't have to give up old files," she said. "You're not forcing uniformity and ability to talk between applications, which adds one more layer of software." She also said this route is likely to the more costly than buying an allbe more costly than buying an allin-one product.

Like all-in-one products, operat-Internal memory, with 512K bytes or more often required to run multiple applications comfortably.

And both types of software products take a long time in the lab, often lagging well behind delivery schedule.



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In the overnight air express business, it's axiomatic: It's people, not planes that deliver. So improving worker efficiency is critical. That's why Burlington Northern Air Freight uses Davox integrated workstations. In customer service, for example, they found Davox systems help people work about "twice as fast" as the previous system.

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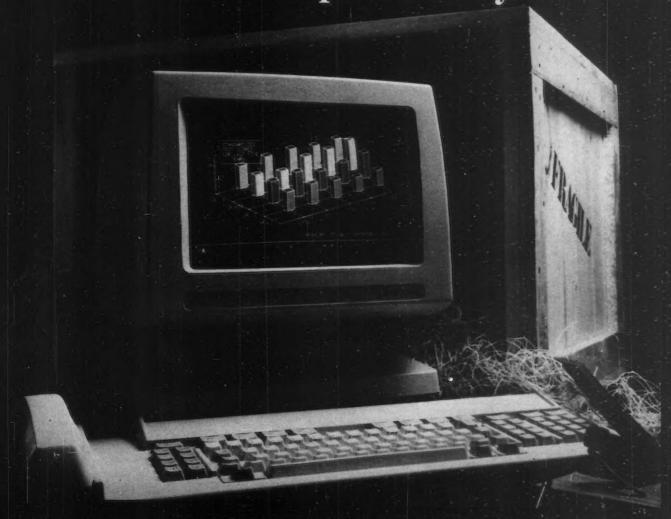
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# Scottish academic/corporate venture targets AI R&D

GLASGOW — Academia, private business and government in Scotland have joined forces to develop fifth-generation software tools for both the corporate sector and the public domain.

The Turing Institute, which operated out of its founders' offices at the University of Edinburgh for the first year of its existence, re-

cently relocated near Strathclyde University here.

The nonprofit organization is intended to make advances in research and development in the machine intelligence field and to help bring those advances to market through corporate affiliates, said James Richmond, general manager of the institute. The institute received initial support from the British government's Scottish Development Agency. Richmond said that a key

Richmond said that a key difference between the institute's approach and that of other academic/corporate partnerships will be that the corporations can send employees to work with the institute, "rather than get served every month with tons of paper that they can't find a use for."

The affiliates, who are charged £20,000 annually, can take advantage of training programs, remote access to the institute's Digital Equipment Corp. VAX-11/750 superminicomputers and the chance to market programs the institute develops, according to Richmond. He

said there are now 10 affiliates, including one American company, and there will be a maximum of 15.

The institute was organized by executive director Donald Michie, former head of the Machine Intelligence Research Unit at the University of Edinburgh and Chairman of the Board Lord Balfour of Burleigh, director of the Bank of Scotland.

Richmond said that the institute's work will be released in any of several forms, either through publicly available academic papers or as commercial products through the affiliated companies or technology transfer companies associated with the institute and Strathclyde University.

University.

The institute is featuring 10-week courses for representatives of the affiliates and for visiting scholars from around the world. The courses focus on expert and knowledge-based systems, robotics, machine intelligence and computer vision.

The annual report states, "The prime activity of the institute will be to conduct long-range research and industrial teaching. Its role cannot be to solve industry's immediate technical problems, but rather to explore and make accessible new problem-solving capabilities and tools."

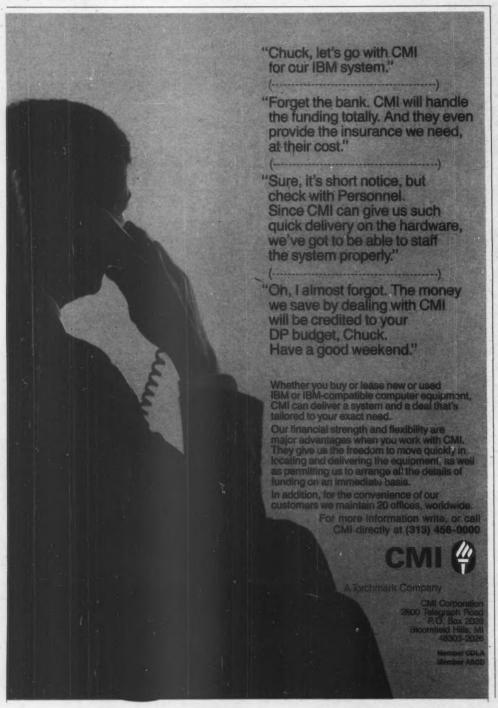
# LINK from page 31 users to set up their own

users to set up their own menu-driven applications. "We have no commands, and you don't have to go through our menus," Wetherell said.

The strength of Alpha Software, Inc.'s Electric Desk lies in its simplicity, said Dan Davenport, manager of audiovisual services at Minolta Corp. in Ramsey, N.J. and an early user of the software. "It's very comfortable to use," he said. "I didn't have to go through all sorte of weird contortions to [understand] it."

Integrated packages place large demands on internal memory, disk storage and the CPU of the basic IBM Personal Computer. In the future, the packages will benefit from the spread of more powerful micros such as the Personal Computer AT.

Important software drawbacks, meanwhile, are directly attributable to MS-DOS limitations, such as the operating system's direct-memory address capability and single-tasking nature. Many developers expect integrated software to make a natural transition onto new machines running multitasking, multiuser software under another operating system, with AT&T's Unix seen as the leading candidate.





#### **AUSTRALIA**

MELBOURNE — The massive Computerized Legal Information Retrieval System went on-line at the New South Wales Law Society recently, becoming one of Australia's largest commercial data bases. The company will begin linking legal firms to the system in small clusters over the coming weeks. Full commercial launch is slated for February 1985.

SYDNEY — Datapoint Corp. has out-raced Wang Laboratories, Inc. and IBM for a local-area network contract from the National Roads and Motorists Association here. The Datapoint Arcnet-based local-area network will link the organization's information center and its Amdahl Corp. 5850 machine. The system will replace a six-year-old Wang 30 system and a five-year-old IBM 3730 system and support about 18 terminals.

#### BRAZIL

RIO DE JANEIRO — The bill that will prevent foreign companies from dealing in Brazil's computer industry has just won overwhelming approval from the Brazilian Congress here. According to the terms of the bill, multipational firms already manufacturing computers in Brazil, including IBM and Hewlett-Packard Co., may continue to conduct business here, but no new foreign companies will be admitted. The passing of the nationalistic "market reservation" legislation follows a year of heated debate on the subject. The bill presently awaits the signature of President Joao Baptista Figueiredo.

## CANADA

MISSISSAUGA, Ontario — An \$80 million investment has put Northern Telecom Ltd. firmly in the race to develop the world's fastest semiconductor chip and also placed Cañada on the map as a new center for advanced semiconductor research. The communications giant will spend half of the money to expand its semiconductor facility in Nepean, Ont., and the rest to import the needed chip-making equipment. The micro circuit design facility is expected to be operational in 1987 and will focus on developing advanced Cmos telecommunications chips with 200,000 circuits in half the space of existing chips.

## JAPAN

TOKYO — Since the IBM 5550 small business system equipped with Kanji-character word processing software has met with success here, IBM reportedly intends to market another addition to the personal computer line in Japan with a lower price tag. The new machine will be compatible with the 5550, have an operating system specially designed to handle the Japanese language and feature a Microsoft Corp. MS-DOS option. The system will use 3.5-in. microfloppies,

come with two disk drives and cost approximately \$1,250, sources said. The IBM machine will compete directly with NEC Corp.'s 9800 series.

TOKYO — Mitsubishi Electronics Corp. has announced the Tegata Hambetsu-ki, a security system intended to monitor computer rooms. The product reportedly identifies people's hands when displayed before a camera, accompanied by the individual's password code. The security system has a capacity of 250 personnel and costs \$7,500, a spokesman said.

TOKYO — Fujitsu Ltd. has unveiled the Fujitsu Integrated Digital Communication System (Fidics), which is intended to become an international communications network. Fidics can reportedly transmit text

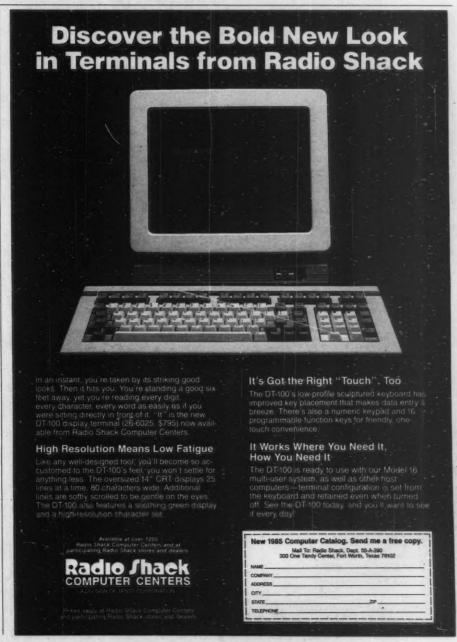
data, voice data, image data and coded data. The system offers communications savings up to 30%, according to a vendor spokesman. Fujitsu plans to phase the system into their own domestic and foreign offices in the coming months.

TOKYO — Japanese market analysts predict sales of 100,000 home microcomputers by year-end, with the introduction of the standard MSX operating system. At the same time, Japanese manufacturers are gearing up to compete against the European market leaders, Sinclair Research Ltd. and Commodore Business Machines, Inc. In response to the Japanese threat, Commodore and Sinclair spokesmen called the MSX standard "too late" and accused Japan of "freezing software at the Model T Ford stage."

#### UNITED KINGDOM

LONDON — According to consultant Peter Moyes, the UK computer industry cannot compete with the Japanese. "It is totally unrealistic to believe that the UK can match the Japanese fifth-generation project," he said at Impact '84, held here.

OXFORD — Dr. Nigel Harding has offered a magnum of champagne to anyone who can successfully decipher his "unbreakable code" for transmitting information between personal computers. The consultant biochemist said that breaking the code would take hundreds of years — even with a supercomputer. Harding recently invited two mathematicians from Cambridge University to take a crack at it. Both failed.



# U.S. market, joint ventures draw Israelis to Info '84

NEW YORK - When asked why Israel boasted the only national pa-villion at the recent Information Management Exposition & Conference (Info '84), Amiram Shore hypothesized it was the "special relationship" between the U.S. and Israel that drew the contingent to New

"The American market respects the Israelis' talent and ability to do things," Shore said. "And we believe the biggest market in the world is in

the U.S.
"Info is a very specific show does not have the reputation of an international show like the [National 'We don't have cheap fingers. What we do have are inexpensive brains. There is an excellent educational institute in Haifa, and we have a highly educated population. We are application software rich.'

Peter Muhlrad - U.S. Director, Israeli Trade Center

Computer Conferencel or Comdex, so just a few foreign companies make the trip," Shore continued. "But in a small show like this, we think we get the right audience. It's smaller and less crowded, so you can really show yourself."

Shore is president of the Israeli computing conglomerate MML Computers and Software Industries Ltd. With financial backing from the Export Institute of Israel, Shore came to the Info '84 conference along with representatives from seven other

companies from his country. Peter Muhlrad, U.S. Director of the government's Trade Center here, said that the Israeli pavillion has become a tradition during the past four years at Info shows and has produced some interesting side ef-

"Last year we had people lined up 40 deep who wanted to move to Israel to work. Jewish people go to Israel to live in a Jewish state all the time we just did not expect them to make inquiries here. So we put them in touch with the right recruiting firms. That was one offshoot of our presence at the show last year."

More important, the show serves to set up Shore and his compatriots with potential joint ventures in the U.S., Muhlrad said. "This is really the best route for an Israeli firm. We try to put people in touch with potential partners because offshore application development just does work.

Muhlrad's job with the govern-ment of Israel's Trade Center is to represent Israeli businesses in the U.S. and to promote trade and exchange agreements. He explained that Israel was a highly computer-literate country, and business agree-ments with the U.S. can prove to be lucrative.

"We don't have cheap fingers. What we do have are inexpensive brains. There is an excellent educational institute in Haifa, and we have a highly educated population. We are application software rich," he noted. Also, practically all software is writ-

ten in English, Shore added. Currently, Israel's software sales outside its borders are negligible, but Amnon Ovadia hopes that 75% of his business will soon be international.

Ovadia, also at the Israeli pavillion, was representing a software company called Product Computers Ltd. whose main product is Dentis, a dental clinic management system that runs on the IBM Personal Computer and compatibles. Ovadia pointed out that in order to be profitable, his company must sell abroad. "There are only 2,000 dentists in Israel -- in New York City alone there are 13,000," he said.

But can they sell the same package to a New York end user and to a user in Tel Aviv? Do professional identities transcend cultural lines and international boundaries, or is an Israeli DP manager different from his American counterpart?

#### Sophisticated end user

"End users in both countries are very similar. They're very sophisticated. There are not many beginners anymore. They know how to evaluate products," according to Shore.
"Especially in the U.S., people

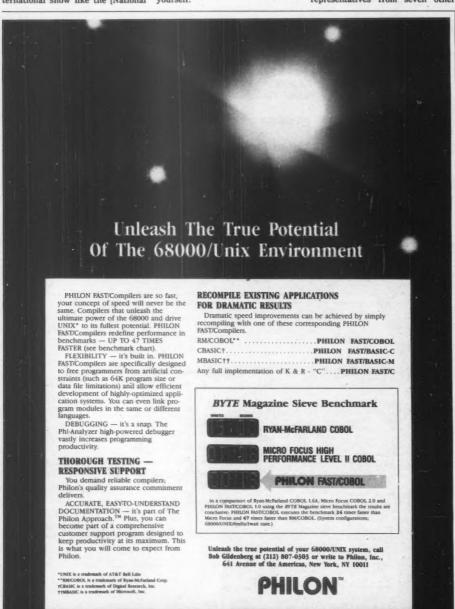
want to have the most updated prod-uct available," Shore added.

Muhlrad seconded Shore's opin-

ion: "Users are about the same. But DP managers make about 30% less in Israel. And, of course, getting equipment takes a long time in Israel."

Ovadia claimed that "Americans

make up their minds quicker. . . . Europeans take much more time. Other than that, they are the same everywhere. Users just care about solu-tions."



## Private sector must act on VDT or U.S. law will: Speaker

By Kathleen Sullivan CW West Coast Bureau

SAN MATEO, Calif. — Unless the private sector takes an assertive role in dealing with the concerns raised by VDT operators, including questions on ergonomic design, job organization and health and safety matters, the government will intervene and impose restrictive legislation to deal with the issues.

That was the assessment of Alan F. Westin, professor of public law and government at Columbia University, who addressed a seminar audience last week at a day-long conference on VDTs, sponsored by the American Electronics Association (AEA).

According to Westin, who recently completed a two-year study on the ways in which VDTs are currently used in American offices, legislators will decide within the next two years whether private industry has adequately addressed the concerns of VDT users.

If they perceive that only a handful of companies have responded, they will take matters into their own hands, he said.

#### Forward strides

In his study, Westin found that industry has taken some forward strides over the past two years. In early 1982, very few U.S. firms were producing ergonomically designed terminals, he said. European companies, by contrast, were selling a variety of terminals that included features such as detachable keyboards and monitors that could be tilted and swiveled.

But that situation has changed, he said. American companies now sell a variety of terminals that include adjustable features. In addition, manufacturers and managers are paying more attention to the importance of ergonomic design principles in workstation furniture and accessories, he

Other issues are also the focus of increased attention, Westin said. Two years ago, employers were able to put issues raised by VDT users on the back burner, he said.

But today, with labor unions and women's groups voicing their concerns over health and safety issues, the debate has gained national prominence.

#### Effects on vision, pregnancy

Much of the attention has focused on the effects of VDT use on vision and pregnancy. Walter E. Baker, IBM's senior VDT ergonomics advisor, told the audience that no scientific evidence has been presented linking VDT use to long-term vision problems, miscarriages or birth defects.

Citing a number of studies, Baker said the radiation emissions from VDTs are well below all health and safety regulations.

Yet other groups maintain that further study is required. The working woman's organization, 9 to 5, has called for a national study of VDT operators that would assess whether they face greater risks than other office workers.

In a telephone interview, Elaine Taber, 9 to 5's program director, said the issues related to VDT worker health and safety are "definitely still

an open question."

In its own surveys, the group has identified a variety of operator concerns, including high stress levels, vision problems, muscle strain and problems experienced by pregnant women.

"We want to know what's causing these problems," she said. No scientific studies have conclusively ruled out a connection between VDT use and user health problems, she said. She questioned whether industry spokesmen who have dismissed user concerns are "really in touch with users."

According to Robert Arndt, another panelist at the AEA seminar, the introduction of a new technology into

the office can be a cause of stress among workers.

Arndt recommended that companies involve users from the beginning in the decision-making process, and give them a voice in the selection of companies should address the full range of worker concerns — from health and safety issues to job security concerns — when installing a new system.

Arndt recommended that companies involve users from the beginning in the decision-making process and give them a voice in the selection of the system. In addition, companies should offer training and support, including access to personnel who can answer health and safety questions.

Finally, firms should create an avenue of redress for employees to ensure that concerns about the technology can be addressed on an ongoing basis.

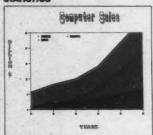
Richard J. Curiale, an attorney with a San Francisco-based law firm that represents management concerns in labor relations disputes, warned the audience of the consequences of not paying attention to user concerns.

"If a user complains, take those complaints seriously," he said. "I can guarantee that if you don't, the next time they file that complaint, it won't be with you."

Instead, he predicted, the user will turn to a labor union for help.

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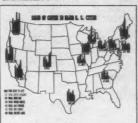
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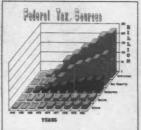
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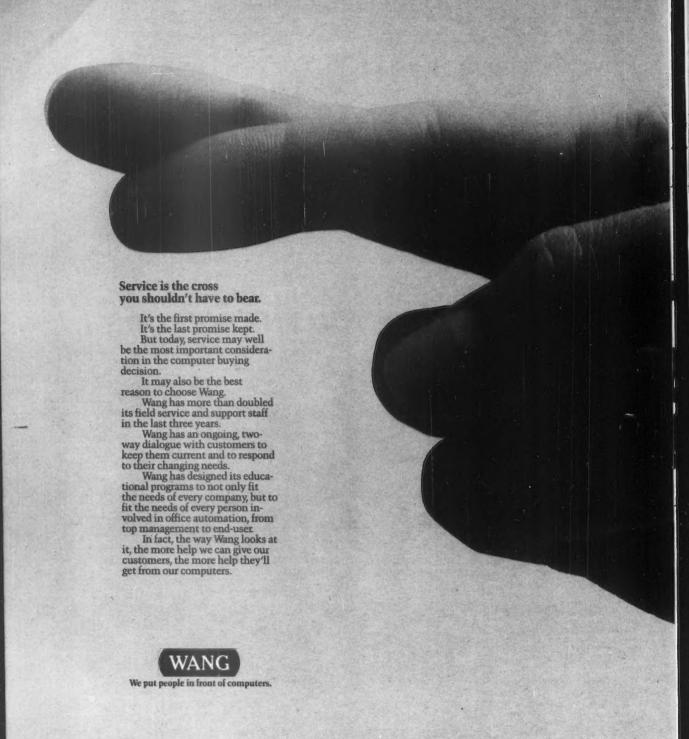
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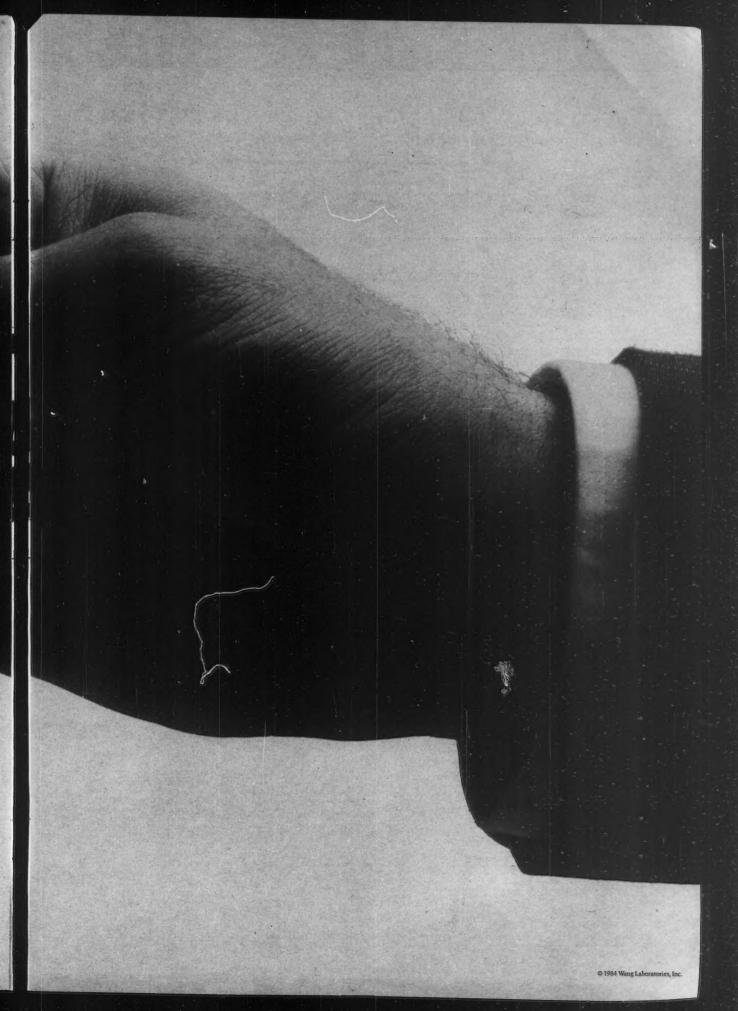
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## In OA strategy, technology takes back seat to savvy

Consultant warns planners to use diplomacy when implementing OA

By Charles Babcock CW New York Bureau

NEW YORK - Implementing a successful office automation strategy has more to do with credibility and office politics than technology, an office automation consultant told a group of office automation planners at the Information Management Exposition & Conference (Info '84) here recently.

At the end of a two-hour session, N. Dean Meyer, posing as the boss of an office automation planner, figuratively fired several of his listeners for suggesting strategies that got him into trouble without solving business

Many companies devote weeks to selecting a computer system and related devices without figuring out how they are going to get people to use them or get workers in different departments to use them cooperatively.

Meyer, the originator of a game called Office Automation, in which players try to win with an automation strategy, is the president of N. Dean Meyer and Associates, Inc. of Ridgefield, Conn. N. Dean Meyer and Associates has been involved in studies of automation implementation efforts at several companies.

Many companies devote weeks to selecting a computer system and related devices without figuring out how they are going to get people to use them or get workers in different departments to use them cooperatively, Meyer said. Once the effort is perceived as an intrusion on someone's turf or the captive of interoffice rivalries, it is going to encounter obstacles, he added.

Asking for power with which to implement office automation is a mistake, he warned. No matter how much authority an innovator thinks he has been given, he is going up against department heads and vicepresidents who have as much or more power and who have greater savvy in the ways of the organization, Meyer said.

He fired several of his listeners when they requested more power as their next strategic step in effectively implementing OA.

Requesting enough staff to implement office automation is another mistake, he continued. The office automation innovator has to get existing staffs to work with him, and, bloating his own roster will merely arouse jealousies.

Even forming an interdepartmental steering committee too early holds pitfalls, Meyer said. If the automation effort is in an embryonic stage, each department may want to review other departments' ideas, and the effort will get bogged down in bickering, Meyer told the group.

One of the keys to a successful strategy is identifying a task that the business needs automated and then finding the right "pilot" to lead the way, he said. A good pilot is an upand-coming employee in one of the key divisions of the company. He is already looking to automate a basic function or can be persuaded to do so, Mever said.

Even at this early stage, the office automation group can thwart its own efforts by focusing on technology which personal computer, word processor, minicomputer or communications devices to buy. Most departments have their own technical experts who are eager for the chance to select the latest technology. Using this resource will tap a source of creative energy for office automation, he said.

An office automation innovator and his staff must have their own technical expertise, but it is not important in the early stages that they investigate technological alterna-tives. It is not even important to buy only compatible equipment.

What is important, Meyer said, is to get end users involved in putting new equipment to work to solve problems for the business. If they have a say in selecting it, they are more likely to use it.

'An office automation group cannot be an expert on everything. It is a business consultant, diagnosing a business problem and designing a so-lution," he said. "A wise office auto-mation innovator will try to facilitate solutions, but not control them. By building a reputation as useful, you will gain the support of users groups," he said.



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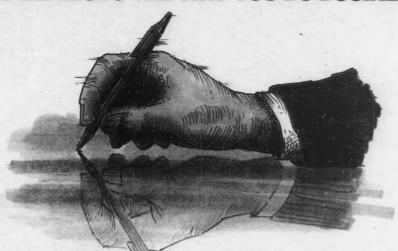
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## OA gives law firm an edge

Law offices are not usually at the leading edge of office automation, but in Boston, the firm of Hale and Dorr thinks automating will give it an edge over its competitors.

John M. Westcott Jr., assistant managing partner of Hale and Dorr, said his firm employs two support people for each of its 200 lawyers. It turned to OA as a way to hold down staff and upgrade support services.

Hale and Dorr decided to automate as much as possible when it realized in the late 1970s that it needed word processing capabilities outside the word processing center, Westcott re-cently told a session at the Information Management Exposition & Con-ference in New York.

In order to begin automating, the firm started phasing out its IBM Sys-tem/3 processor and replaced it with two Digital Equipment Corp. VAX-11/750s. It also purchased 26 units from Computer Consoles, Inc. of Rochester, N.Y. A consultant recommended the Computer Consoles Power 520 processors, 32-bit machines based on the Motorola Corp. 68000 microprocessor, because they run the AT&T Unix operating system, which will allow other users and word processors to hook onto the system.

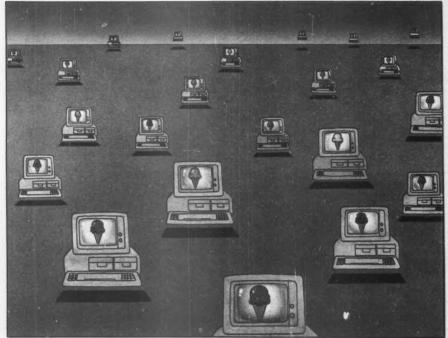
"The younger lawyers were al-ready familiar with micros. They wanted to be in the forefront of the use of computers, and they constantly think of new applications," he said. Older lawyers opposed the automation, in part because of the cost of substituting a new computer system for a functioning one. However, the advantages are now accepted throughout the firm.

Hale and Dorr plans to develop in-teroffice electronic mail and calendar systems, but, Westcott noted, "Software development is the most disap-pointing thing." The firm employs two Unix programmers and also con-

tracts out some of its software tasks.
In addition, the disk drives "break down too often." When a Computer Console unit goes down, lawyers do

not have access to certain files.
But the system is allowing the lawers to shift the daily billing tabulation from their own desks to their secretaries', and the support staff is reacting as if the quality of its work life has been upgraded by the new technology as well, Westcott said.

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### IIA meet slated for Nov. 11-14

SAN FRANCISCO - "The Information Nation: New Actors, New Factors" will be the theme of the Information Industry Association's (IIA) 16th Annual Conference and Exhibition to be held at the Sheraton Palace Hotel here Nov. 11-14.

The conference will feature more than 35 presentations and discussion groups focusing on the latest in technology, information services and trade trends, IIA said. Among those represented will be data base suppli-ers, videotex producers, broadcast companies, publishers, hardware manufacturers, service companies, financial institutions and advertising and research groups.

Orville Freeman, chairman of Business International Corp., will deliver the conference keynote address. Among the other scheduled speakers are former California Gov. Edmund G. Brown Jr. and Rep. Ed Zschau (R-Calif.). The conference targets chief executive officers, financial directors, strategic planners, research and development personnel and data processing and marketing professionals.
The cost to attend the IIA 16th An-

nual Conference and Exhibition is \$545 for IIA members and \$745 for nonmembers. Information is available from the IIA, 316 Pennsylvania Ave. S.E., Washington, D.C. 20003.

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## Numerical ratings can mislead telecom service buyers

By Phil Hirsch
CW Washington Bures

WASHINGTON, D.C. — Companies that evaluate telecommunications system bids "by the numbers" are deluding themselves, according to James Sobczak, communications manager for the Bank of America. He spoke here last week at the annual convention of the North American Telecommunications Association (Nata).

Sobczak was referring to using a numerical rating system to compare the technical capabilities of competing bidders. His point was that both the selection of capabilities to evaluate and the buyer's judgment of how well each bidder satisfies those re-

quirements are subjective processes. Thus, companies that choose numerical rating schemes to avoid subjective influences are fooling themselves, he argued.

#### **Evaluate performance**

Sobczak also said a vendor's service performance doesn't depend solely on how quickly the service technician responds to a call for help. How quickly the work is done and whether the vendor lives up to his commitments — particularly whether he meets deadlines — are other factors to consider. Also, because a vendor's quality of service often varies from one geographic area to another, a prospective purchaser

should concentrate on querying the customers of that vendor located in the areas where service will be required.

Besides Sobczak, the Nata seminar included Patricia Paul of Cornell University, Evelyn Olschewski of Massachusetts General Hospital and Thomas McManus of Allegheny International, Inc. — all managers of a large communications network.

McManus reported that about 25% of his system's capacity is being resold to outside users. Paul said Cornell is considering reselling long-distance services to its students, while Massachusetts General Hospital, according to Olschewski, is considering a long-distance resale plan for its pa-

tients. The latter two speakers said their interest in resale was triggered by a growing cost squeeze — their budgets are rising, but not as fast as charges for communications ser-

Another result of this cost squeeze is an increased interest in sharing arrangements, Paul said. By joining with a number of other colleges and universities, Cornell has been able to purchase IBM Personal Computers at a hefty discount, she said. Cornell may get together with other schools to provide what she called "bypass on a grander scale" — a private, long-distance network that would supplant individually priced toll and private-line facilities.

### AI talk to open Educom meet

PRINCETON, N.J. — Edward Feigenbaum, professor of Computer Science at Stanford University in Stanford, Calif., will deliver a keynote address on artificial intelligence at Educom's 20th anniversary conference Oct. 30-Nov. 2 at the Hyatt Regency Hotel in Cambridge, Mass.

Hosted by Boston University, MIT and Harvard University, the conference will provide an opportunity for college and university administrators and faculty to learn about developments in information technology for higher education.

Several area companies, including Data General Corp.; Digital Equipment Corp.; Honeywell, Inc.; IBM; Prime Computer, Inc.; and Wang Laboratories, Inc., have arranged for tours and demonstrations in their laboratory and manufacturing areas. Technology tutorials and demonstrations will be held at the hotel.

Registration for the program is \$225 for member institutions applying before Oct. 5, and \$325 for non-members. After Oct. 5, registration is \$275 for members and \$375 for non-members. Educom, P.O. Box 364, Princeton, N.J. 08540.

## Ingres DBMS users to meet

BERKELEY, Calif. — The fall meeting for users of Relational Technology, Inc.'s Ingres data base management system (DBMS) will be held Oct. 29-31 at the New Orleans Fairmont Hotel in New Orleans.

Speakers will include Chris Date, an independent consultant specializing in relational data base technology. Date will address "Relational DBMS — Myths and Misconceptions."

User presentations, information exchange sessions and Ingres classes will be conducted at the meeting. Preregistration is \$195 per person, and \$165 for each additional attendee from the same organization.

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## Explosive corporate micro growth eliciting innovation

By Donna Raimondi

BOSTON — Corporate microcomputers are in a stage of explosive growth, and the organizational user is causing innovation in software, hardware and micro-mainframe communications.

So said Paul Puzzanghera, product manager for microcomputer products of Management Decisions Systems, Inc., at MDS' Express Users Group Third Annual International Conference here recently.

Systems developed for large computers are moving toward the micro arena and are being designed for enduser ease, Puzzanghera said, adding that micro products are incorporatIt is not enough to have the micro and mainframe physically connected . . . 'You are confronted by a series of choices, and they really are dichotomies in your architectural decisions.' — Paul Puzzanghera product manager for microcom-

sions.' — Paul Puzzanghera, product manager for microcomputer products of Management Decisions Systems, Inc.

ing mainframe communications and more power.

Puzzanghera outlined current microcomputer developments and trends that reflect the corporate user's needs. Microcomputer hardware is moving toward 32-bit processors, and Winchester-type, half-height disk drives are getting smaller in size but are increasing their data storage capacity, Puzzanghera said. The Intel Corp. 8286 processor has hardware support for virtual memory, which means more data can be moved in and

out of core more quickly, he added.

Workstation manufacturers have carved a large niche for themselves, especially in places where workers are autonomous but using shared data, such as in computer-aided design and manufacturing applications for engineers, he said. "Graphics is like the fun house maze," Puzzanghera said. "Every time you turn around you hit another wall." Output technology and graphics languages improvements are more likely to occur in the next year than any one great graphics innovation, he said.

Users want fast, cheap, color, quiet printers, and this year, he said, Hewlett-Packard Co. is taking a "tremendous step forward" with its new laser jet printer.

Microsoft Corp.'s MS-DOS operating system, which is resident on 95% of micros, is fine for single-user machines, Puzzanghera said, but corporate users have had to add operating environments like IBM's Topview, Microsoft's Windows and Visicorp's Visi On to compensate for weaknesses in the operating system.

AT&T's Unix-type operating systems do speak to corporate computing needs, he said, and Puzzanghera predicted that there will be a merging of Unix and DOS technologies in the next few years.

Spreadsheet, data base and desktop methods of using data each have a role, but none is appropriate for every corporate need, he said.

#### Useful access methods

Related to these methods are a variety of useful access modes, Puzzanghera said. Mouses and touch screens allow users to "point and pick," and corporate users can access and manipulate data through commands, menus and forms, he said.

Natural language, which is in its infancy stage but has promise for the future, permits nontechnical people to use simple English phrases to do their computing.

It is not enough to have the micro and mainframe physically connected, Puzzanghera said. "You are confronted by a series of choices, and they really are dichotomies in your architectural decisions," he added.

Designers for micro-to-mainframe links should think about where the corporation sits on issues such as bisynchronous or asynchronous communications, star vs. ring networking, traditional orientation vs. a local-area network, separate automation vs. integrated automation and the tools approach vs. the data base approach, he said.

"The [decision support system] data base is where you must put your effort," Puzzanghera said. All information should be collected to provide central access to data, security, dictionary capabilities and auditability, which will provide much more benefit than each individual data base, he said.



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## Local-area net improves Swiss school's DP resources

LAUSANNE, Switzerland - For the telecommunications group at the Swiss Federal Institute of Technology here, implementing a local-area network was critical for its intended expansion to an additional campus.

'In an academic environment, it's important to be able to give students and researchers the information they need and to make it available from their own workstations," explained Philippe Perret, a telecommunica-tions engineer at the institute's DP department.

The telecommunications group undertook a search for a local-area network that would allow hardware from various vendors to share common resources. The group evaluated a number of products and even visited several vendors in the U.S.

In 1983, the institute selected a test local-area communications system, Net/One from Ungermann-Bass, Inc. of Santa Clara, Calif. The system included seven network interface units, each of which permitted the attachment of up to 24 devices

Because the institute was in the process of expanding its campus to include a new location about three miles away, the telecommunications group was also interested in eliminating the miles of copper cable and outdated switching equipment that had previously been used to move data in and out of the various computing resources on the campus.

"Before the first Net/One installation, we had racks of modems and hundreds of pounds of copper wire running to a central switching facility," Perret explained. Switching was sometimes done manually with patch panels located at different sites at both campuses. According to Perret, installation of the Net/One local-area network eliminated the need for much of this equipment.

The institute's first Net/One was used to interconnect a Control Data Corp. 170/720 mainframe, a number of Digital Equipment Corp. VAX-11/ 780s located at different points around the campus and numerous terminals and peripheral devices. Prior to the installation of Net/One, computer equipment was primarily connected in a classical star configuration. Outside services were accessed via Switzerland's Postal Telephone and Telegraph Agency telephone network using low-speed modems and the university's private automatic exchange.

Early in the planning stage for the extended local-area network, the telecommunications group decided to use a hierarchical network topology to interconnect all the departments at the new campus. This was accomplished by employing a repeater-en-hanced baseband Net/One system as a backbone network to link computers and peripherals attached to separate departmental networks.

"Networks at the new campus can best be viewed not as monolithic sys tems, but as a series of connected spurs attached to the baseband backbone network," Perret explained.

The need to support a wide variety of computer equipment was further illustrated by an equipment update that was planned to coincide with the expansion to the new campus. "The data processing department was changing from a CDC 170/720 to a new CDC 170/855 mainframe, so we had to make sure that the [local-area network] would work with the new equipment," Perret said.

With Net/One, Perret added, users can program at a number of system architectural levels, allowing students and faculty members to interconnect unique equipment such as personal computer workstations. high-speed laser printers and graph-

ics devices.

#### High level of DP sophistication

The institute, with a computer user population of about 2,100 students and 700 faculty and staff members, feels that a simpler communications infrastructure is one of the most important benefits it has gained from its Net/One. The result is a high level of data processing sophistication among students and faculty members who have worked with Net/One, according to Perret. "Today we have a number of students who are very knowledgeable about local networking, both from a hardware and a software standpoint. It's be-coming a learning tool," he said.

Simon Waddell, director of telecommunications at the institute, re-calls tougher times for Net/One. In general, opposing faculty members thought the DP center was too bu-reaucratic. Attempts by the DP staff to install a communications system that touched all of the departments were seen as yet another attempt to interfere in the way individual departments were being run.

'We found out very quickly that the quickest way to overcome these objections was through professional education. We pointed out that localarea networks bring down systemwide interconnection costs and drastically improve shared information,' Waddell said.

"By [allowing] students and researchers [to] get information they needed to complete their research from a single workstation, we were able to show how a local-area communications system could improve the use of our institution's data processing resources," conclude telecommunications director. concluded the



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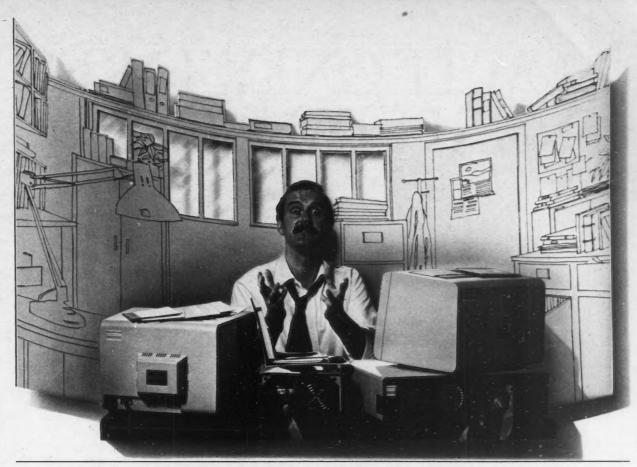
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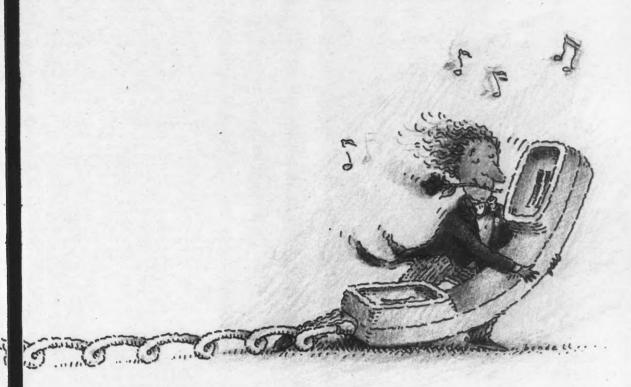
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## Bank keeps tabs on data with mainframe security tool

SALT LAKE CITY — After 12 years, a bank here achieved the kind of flexible security control it needed to support its programming and online operations with the help of a mainframe security nackage.

mainframe security package. Headquartered here, First Security Bank has more than 5,100 employees and some \$6 billion in assets. The bank maintains a data center equipped with IBM 3033 and 3083 mainframes, a Hewlett-Packard Co. HP 3000/68 for remote job entry and 2,000 terminals in 160 branch office locations.

According to Security Administrator Gerald Jenson, First Security's search for the best method of controlling data and system security began 'We were able to build common data sets so programmers on an application team could pass or use common files.'

Gerald Jenson, security administrator at First Security
 Bank

nearly 12 years ago. "Back then, when we started to look for security software, our only option was to write a system ourselves. Only companies with a large staff of programmers had the resources to do that, however."

"At that time," Jenson continued, "we only had about 25 programmers." So, to satisfy our needs and those of the DP auditors, we used some internally written security modules and the security that the installed IBM CICS facility provided." Jenson said that First Security's

Jenson said that First Security's need for a flexible and comprehensive security system grew as the computer center staff expanded to 245 employees and the center began to offer on-line processing capabilities to the 2,000 terminals. In addition, the company began marketing third-party automatic teller machines and credit card services that required confidentiality and increased data security.

According to Jenson, First Security needed a package that adapted to the company's procedures and routines. "We have 160 different situations for setting up security because every branch functions differently. In a larger branch, for example, an officer may only have administrative responsibilities. But in a smaller branch, the officer may do administrative work and data entry, as well as process loans."

Jenson and an evaluation committee reviewed the packaged security software available for the data center's hardware. What they finally selected was CGA Software Products Group, Inc.'s Top Secret package. Jenson said Top Secret used IBM's standard security interfaces and, therefore, required no programming modifications to the data center's IBM MVS operating system.

#### Overhead lower

Jenson also said that Top Secret's overhead was lower than the other security software reviewed because it ran on one disk I/O per job. The package, he said, operates by reading the security record of the user into a user's address space and then performing the verifications, thus eliminating redundant tasks.

According to Jenson, First Security began implementation of the security software by "defining" programmers and operations personnel to Top Secret. A list of resources that each individual needed to perform a job was used to create each person's security profile. Users were asked to help define their own needs, resources and limits. That user participation, he said, eased the implementation process.

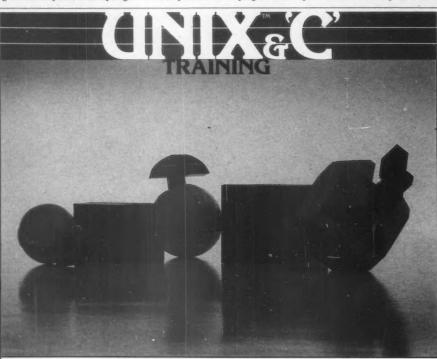
"We were able to build common data sets so programmers on an application team could pass or use common files," Jenson said. "Libraries or data set names that each programmer needed were included in a team profile. While departmental and divisional profiles were used for groups with homogeneous usage of computer resources, Top Secret also recognized the need for individual profiles for some employees."

#### More secure applications

As a result of Top Secret's implementation, Jenson said, applications at First Security are now more secure

"In some instances in the past, within the finite levels of CICS security, some security levels covered as many as three applications. That meant that users could inquire on more than one application. With Top Secret's infinite number of profiles, we were able to build profiles for each application and employee job function in programming, computer operations and all branch-associated

"That gave us better control over who could use or get to any of our computer resources. That is, after all, what comprehensive data security is all about," he said.



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## UPS weatherproofs production

in southern Florida do more than scare away tourists. At the Levitz Furniture Corp. headquarters here, storms threw the computer system intermittently into chaos

The resulting disk difficulties, loss of personnel time and disruption of staff activities multiplied the power problems into huge losses. It would often take two to three hours for data processing personnel to backtrack through the disrupted data and get the numbers back into their original condition.

"When the system went down, our people would just sit tight and wait it out since their entire job function revolved around the computer system," said Ken Leonard, special projects manager at Levitz's Communications and Network Systems Division. "It was a total wipeout in terms of nonproductive time that the company had to pay

#### cations hardware

Levitz's communications center hardware consisted of an IBM System/38, several IBM Series 1 front-end processors and associated communications gear, including modems and a bank of autodialers that interface with the System/38. The network functions in both real-time and dedicated-time modes and links the home office system to 72 branches and six group offices in the U.S.

In addition, IBM System/ 34s at Levitz's corporate fa-cility channel daily communications with the branch offices to keep the home front up-to-date on sales and inventory and to expedite information to the company's field locations.

Levitz's managers decided to support the system with a Clary Corp. uninterruptible power supply (UPS) system as a backup for power abnor-malities. It backs up the 110V wall receptacles for the CRTs and the emergency lights in the computer room.

The Clary model in place is a three-phase, 30 kVA UPS system supplied with a standby 120V dc battery plant that provides emergen-cy power. Levitz chose the Clary model because it was quiet and small enough to be placed in the computer room. The UPS system uses sealed batteries so there is no gas disbursement, and conse-quently, no fans or ventilation are needed.

#### **Downtime minimized**

Since the unit's installation in November 1982 until recently, "we hadn't had any processing downtime due to power failure," Leonard observed.

Recently, however, one component of the UPS was it-

self knocked out by light-ning, and the unit's static byswitch stopped functioning, Leonard said. A service agency replaced the part. When Leonard brought up the computers, they crashed again because the replacement part was faulty. The faulty part was re-placed, and the system was fixed. Prompt service is not easy, Leonard said, because the only agency qualified to work on their power supply is located in central Florida.

Even so, Leonard said, "Our credibility and data availability have improved dramatically. The unit paid its way after only a few hours during the first few thunderstorms following its installation."

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## Medical practice regroups, trades mainframe for mini

EL PASO, Texas -El Paso Medical Surgical Associates reorganized last year, the five-physician internal medicine and cardiolopractice here began searching for a new computer system to replace its Burroughs Corp. mainframe.

The medical facility wanted a smaller rather than a larger system because the practice decided to provide only clinical services instead of both clinical and hospitalbased services, greatly reducing its DP and file storage requirements.

"With the improvements in computer technology that accompanied the advent of microcomputers, we at first thought our needs could be met by small micros," said administrator Dru John. But he quickly discovered that manufacturers could supply the multitasking, multiuser capabilities he required.

"At that point we weren't certain what type of hardware we needed, so we sat down and defined our system requirements," John said.

El Paso Medical Surgical

wanted a system that could adapt to its current six-digit method of maintaining patient accounts and provide aging of accounts receivable by insurance carrier.

Other requirements included appointment scheduling and data mailers that would save the facility monev when it sent out its state-

With the requirements defined, the Associates looked at 40 packages and visited 10 manufacturers. When the search was completed. John had chosen Medic, a software package from Computer Information Architects, Inc. in Lubbock, Texas.

Medic features a number of facilities, including billing, posting of revenue, billing summaries and aging receivables by doctor and depart-ment, diagnosis, appoint-ment scheduling, insurance billing and daily schedules for each doctor.

General business applications were also included, such as accounts payable, payroll, word processing and spreadsheet.

The hardware selected consisted of a Texas Instruments, Inc. Business System 372 minicomputer with four TI Model 931 terminals, 43M bytes of mass storage, two TI Model 810 dot matrix printers and one TI Model 855 dot matrix, letter-quality printer. The complete system costs \$40,000.

Because the clinic's previous system did not have insurance information. John said the task of keying in information on the clinic's 6.000 accounts demanded a lot of up-front work. All the insurance information was keyed in manually, required

#### Accurate patient data

A major system benefit is accurate patient informa-tion, John said. When a patient visits the facility, a clerk assigns the patient a number if he is not registered. Historical and insurance information are entered on the TI system, and the patient's number is entered into the appointment schedule. The patient's name also appears on the doctor's personal schedule. After the visit, the doctor fills out a fee ticket. Fee tickets are entered onto the system at the end of

the day and automatically charged to the appropriate patient's account. Insurance billing is automatic.

John said he believes that automatic billing has pre-vented the hiring of additional staff. "We had not printed insurance claims automatically before," he maintained.
"We had to enter data manually from the bill. The automatic billing on the Medic systems saves a lot of time. If we were still billing manually, we would probably need two or three more clerical people.
"With the system, ap-

pointment scheduling has become much easier, too," John noted. "The appointment scheduling on our old system was just a nightmare."

The only problems John said he encountered with the system were a few software bugs that the vendor fixed a hard disk that went down and the system's documenta-tion. "The documentation seems geared to a medical professional rather than any end user," John said. "I am a [certified public accountant] and I had a few problems understanding how the system worked.

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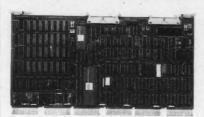
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## Drug firm seeks faster FDA approval with DBMS

CEDAR KNOLLS, N.J. — In the pharmaceutical industry, the name of the game is getting new drugs through the federal Food and Drug Administration (FDA) approval process as quickly as possible

Berlex Laboratories, Inc., an American subsidiary of Schering A.G. of West Germany, plans to speed up its FDA New Drug Application (NDA) submissions process by using a relational data base management system (DBMS) designed for information analysts and researchers in business, industry and government.

According to Joseph Buonomo, a statistical software specialist and project leader for clinical data base development at Berlex, the company plans to submit several NDAs in the coming year. "Sir/ DBMS is one of the keys that will enable us to get a huge volume of work done, considering the relatively small staff — about 18 people — that we have. The projects we have begun are on target, and the prospects are very promising." Sir/DBMS is a product of Evanston, Ill.-based Sir, Inc.

#### 'Inadequate as a DBMS'

Before Berlex brought in the Sir/DBMS package in May of this year, much of the NDA work was done with SAS Institute, Inc.'s SAS statistical package. "Although SAS provided us with excellent statistical analysis capabilities, it was inadequate as a DBMS," Buonomo said.

"Too much programming was required. Data editing and updating were particularly inefficient and difficult to manage. Also, at that time SAS was only available on large IBM machines, such as the IBM 3081 Berlex used through a commercial timesharing service. Our group didn't have any control over its computing environment."

When Berlex began looking for a DBMS to complement the SAS statistical package, it found that

Sir/DBMS had all the features it needed. Among the features Berlex found attractive, Buonomo said, were its SQL+ relational query component, similar to IBM's structured query language, and its ability to export data directly for use with SAS.

He also noted "the direct binary file creation of a Bio-Mathematical Data Processing [BMDP] Save File was excellent because you can also do very sophisticated analysis with BMDP, a package developed by UCLA [University of California at Los Angeles]. In addition, the fact that Sir/DBMS supported a variety of data views — relational, hierarchical and network — was most important for us."

#### **Portability important**

Portability was also an important consideration for Berlex. Sir/DBMS runs on more than 20 different computers and operating systems ranging from supermicrocomputers to mainframes. "Our parent shop in West Germany uses Sperry Corp. computers," Buonomo said. "We have both an IBM 4331 and a [Digital Equipment Corp.] VAX-11/780 in the U.S. If they change their hardware or if we decide to change, we know that Sir/DBMS will be there.

"We have the people trained, and we can bring it up right away. Also, new machines come out all the time, especially Unix machines. Since Sir/ DBMS runs on several versions of Unix, it will be no problem for us to move to Unix."

Buonomo explained that the benefits of using Sir/DBMS quickly became obvious. "Once it was installed, we were very pleased at the noticeable increase in performance, such as CPU utilization and disk I/O. But of even greater importance was the ease of use of the SQL+ component and the package's Forms system for interactive, screen-oriented data entry and query-by-forms.

oriented data entry and query-by-forms.
"Some of the problems we had, such as how to

document changes through the data base easily, how to produce exception reports to see the reasons for changes in the clinical trials and how to control the data-entry error rate, were easily handled by Sir/DBMS," Buonomo said.

The data generated for an NDA is voluminous and complex, Buonomo explained. By the time an NDA is ready for submission, a drug has usually been studied in several hundred to several thousand patients. The NDA contains all the information the sponsor knows about the drug, and it can typically run into thousands of pages.

#### Use in all aspects of NDA process

Berlex plans to use Sir/DBMS in every aspect of its NDA process. Buonomo and his group have begun building a clinical DBMS with the package, which will provide data to all the departments involved in an NDA. According to Buonomo, the system will feed information to the Research & Development Finance Group, the Project Tracking Group, the corporate committee for Drug Regulatory Affairs, which reviews the NDA before submission, and the medical department for ad hoc queries.

"Eventually we will use Sir/DBMS for preclinical trials data and for running our laboratories," he said. "By getting the needed data quickly to all of these internal oversight groups, projects will move along much faster."

Although Berlex originally brought Sir/DBMS in to help with the clinical trials aspects of the NDA, it has proved itself useful in many other areas of research and development. "We looked at an \$80,000 package to do project planning," Buonomo said. "It basically was a DBMS with a program attached to it. Instead of going with that, we plan to implement the same type of capabilities with Sir/DBMS and save money."



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## On-line DBMS helps lone programmer produce reports

HOUSTON - The business of buying and selling land for oil and gas exploration heaps some tall demands on the lone programmer for a growing independent oil and gas exploration company here

Russell Whitton, senior - systems analyst for Wainoco Oil Corp., has to produce reports for the firm's management that contain any combination of 60 different variables on 4,500 land leases, and his turnaround often ranges between 24 and 48 hours. "Instant access to critical information can make the difference between a good business deal and no deal at all," Whitton said.

Granted, he has help from some outside consultants and from his operations manager who "does his fair share of programming around here Whitton said. But Wainoco's growth demanded that this small data center move away from programmer-supported applications and cumbersome Vsam files to a centralized data base accessed by many users.

Whenever management needed an ad hoc report on a large land lease for use in negotiations, our programmers were faced with the task of writing the application to report the information. As the company continued to grow, it became obvious that we needed a system that could supply our users in the field with instant data access and analysis.

Wainoco turned to a relational management system base (DBMS) targeted toward end-user ac "We needed a [DBMS] that would immediately give our pro-grammers a productivity boost, provide our end users with informationcenter-like facilities to support the company's continued growth . . . and in at an affordable price,' Whitton said.

The firm chose CA-Universe from Computer Associates International, Inc. To Whitton, a relational DBMS seemed the obvious choice for sever-

A relational DBMS has dynamic view capability that provides the end user with the ability to create or define relationships between data without regard to the storage structure or location of the data.

With a relational DBMS, set pro cessing replaces record-at-a-time (or procedural) processing. Users do not have to learn a procedural syntax or language in order to access, review, use or update their data.

CA-Universe's price was also right for the firm. Whitton said, as it cost about half as much as other packages he investigated.

Besides experiencing some slow response times under early releases of CA-Universe, Wainoco's DP center has been satisfied with the DBMS from the outset. The data center utilizes a 2M-byte IBM 4331 Model 2 that runs under DOS/VSE and has a 100M-byte disk capacity. "What impressed me immediately about CA-Universe," Whitton said, "was how easy it was to use for programming." CA-Universe provides several in-

formation processing tools and Wainoco utilizes four tools to sim-

plify maintenance and development. A text editor facility, which permits programmers to store, re trieve and manipulate data dynami-

A relational command language.

which allows programmers to transfer data to and from the data base interactively

A forms editor, which eliminates the need for designing and modifying report formats.

A forms driver and report generator, which allow access, retrieval and update of information without programming.

These powerful facilities have helped us to reduce learning curves, Whitton said. "CA-Universe has improved the productivity and cost-effectiveness of our applications development and design so applications go into production much faster than be-fore, at the right price." He said the DBMS has afforded a 50% to 60% pro-

ductivity increase over Vsam files. "In addition," Whitton said, "we don't need a technical systems programmer to perform maintenance. That's a strong point with us," he said, because he has no systems programmers in his shop.

For end users, Wainoco has found that the screen-based facilities for creation, enhancement and modification of applications and the nonprocedural fourth-generation language of CA-Universe are the most used fa-

"Requests that traditionally required a programmer's involvement can be satisifed by the end users themselves," Whitton said. "They can meet their own ad hoc informa-

tion requirements effectively by selecting from a variety of on-line queon-line and information processing facilities.

Wainoco plans to build an information center around the DBMS. "We now have the technology to expand into an information center environ-ment," Whitton said. By the end of the year, he plans to have user sy-tems in place. And by the end of next year, he will start training users on CA-Earl, for example, the DBMS' report writer, to move them toward information center use

"I don't have my users there yet," he said. "When the users start to satisfy their own requests, I'll say I'm



## Info center acts as data counselor, boosts productivity

NEW YORK - Sterling Drug, Inc. put the information center concept to the test three years ago to see if such a facility would be beneficial in supporting end-user computing in its six corporate groups located in 47 countries. Today, the existence of the information center is more than justified as the facility emerges as an integral factor in improving productivity of this pharmaceutical manufacturing company.

The Sterling corporate MIS group originally agreed to establish the information center pilot program because it was motivated by increasing people-power requirements and a growing applications backlog. The initial trial of the information center, which was scheduled for a six-month period, began with the appointment of a three-person staff: a new employee, an MIS professional and Valerie A. Martin, the user community representative and now Project Manager of the Information Support Group.

The staff first identified six vendor-supplied software systems already in-house, which would be appropriate for supporting personal computing by nontechnical end users. Those systems running on the corporation's IBM 3033 and 4341 in-

■ PAC-II, the Project Management System from AGS Management Sys-

Roscoe, a batch-oriented, interactive program generator tool from Applied Data Research, Inc.

SAS, a statistical analysis system from SAS Institute, Inc.

SAS/Graph, also from SAS Insti-

The second step was to begin working with a well-defined group of users in need of assistance. "The information center was not created to provide programming," Martin said. "Our staff is too small to be a quickcoding group. But we were there to help — to teach and coach users and to solve programming problems.

In 1981, 22,000 jobs used informa-tion center software tools. In the following year, the information center staff worked on a consistent basis with about 200 end users to complete more than 50,000 jobs.

"In 1982 alone, we realized an average savings of \$100,000 in cost avoidance," Martin said.

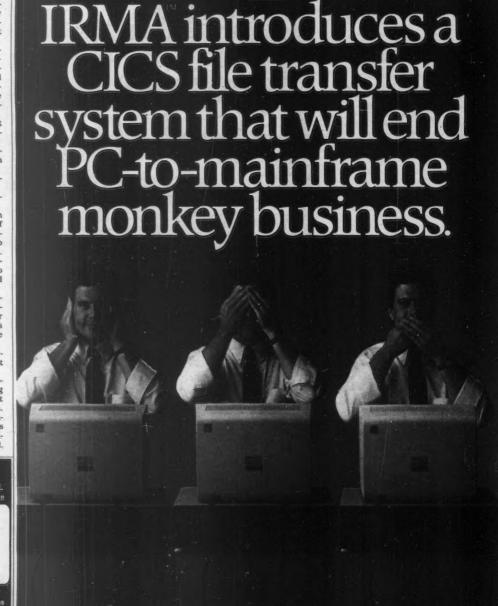
The information center established itself as a counselor on storing and accessing information of benefit to all end users in the organization. "People used to maintain information unique to their own disciplines and call it up from memory or person-al files when needed," Martin said. "They didn't know how to automate the data to allow it to become corporate knowledge. Today, these people use Inquire, our general-purpose data base management system, to develop a better processing environment.

Installed at Sterling since 1974, Inquire was selected as an information center tool for several reasons, among them the system's Englishlike language. "It's easy for users to understand." Martin said. "But the information center staff recognizes another major reason for using In-quire. Inquire lets people change their minds. Even after the data base creation is complete, users may need new improvements as their applications grow. Because Inquire gives us the flexibility to upgrade data bases, we are able to improve some data bases that are eight to 10 years old.'

Another information center service is to provide new Inquire users with a macro-driven application to encourage them to design, test and install their own macros. "People who often use the macro library find a macro is a tremendous time-saving device. Entering such a one-word command can instantly produce a full-page report," Martin said.

The information center also oversees the growth rate of the data bases and the library through monthly reports, which automatically flag data bases reaching 90% of their capacity. When this occurs, the information center calls the users to alert them to the situation. Users also receive an Inquire maintenance report with each update of their data base," she

After just two years, the size of the Sterling information center staff has doubled in order to service the increasing number of users. "Feedback has been very positive," Martin said. "Users tell us they like Inquire because it allows timely data base updating on a periodic basis, has selective retrieval and report writer capabilities and offers user control with no DP intervention. Yet the most important feature is that users need only minutes, instead of several days, to find data with Inquire.



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We are debating whether to document the underlying program logic of systems that are developed with appli-cations generators. Would you recom-mend creating program flowcharts for programs that are not written or designed, but are generated directly from screen layout specifications?

We are entering a new era in program development and system docu-mentation. What we have traditionally documented during development with procedure-oriented code is not necessarily applicable to systems developed with very high-level languages.

I would recommend that you draft and maintain some type of graphic overview depicting the relationships between the major components of the system, but I would not recommend the documentation of the logic of system-created code. That would be

Q I hear talk of a new Ansi standard for Basic. My company has developed several successful proprietary software packages for microcomputers in Basic and I am currently working on another. Is there a new standard? If so, are interesters and compilers available for the preters and compilers available for the new standard?

The current Ansi standard has not kept pace with the evolution of the very popular Basic language. Fortunately, a new Ansi standard for Basic has been in the works for some time

and is being submitted for final public review this summer. By the end of the year, at least one software venwill begin marketing interpreters

and compilers for the new standard.
I would expect (and hope) that major vendors will support the new Ansi standard once it becomes offi-

Q I have been in the data processing industry for almost 13 years. In that period I have authored and copyrighted several applications systems and have sold them locally. These systems in-

clude payroli, accounts payable, gener-al ledger, scheduling and others. I would like to advertise my pack-ages and address a much larger area. My problem is I do not know how to get arted or whom to contact. My pa ages will run on all equipment support-

ing RPG-II. Could you tell me what steps I would take to market my software packages?

Traditionally, software vendors and entrepreneurs have relied on trade publications, direct mail, direct sales and trade shows to reach their audience. During the last few years, traveling product seminars and television have also become integral to software marketing strategy. Vendors are continually manipulating the allocation of their marketing dollars to achieve the most effective strategy. They also take advantage of "free" advertising by sending speakers to conferences and provid-ing product releases to trade periodi-

I don't want to discourage you as there are many millionaires-to-be out there, however, they will make their fortunes on products that are unique or are a substantial improvement established state-of-the-art products.

You may be able to compete locally through personal contacts, but to compete nationally with standard systems, a totally integrated data base environment is a prerequisite. Even if you have the product, you have to be a little lucky to achieve market acceptance.

The expense involved in the development, marketing, sales and ongo-ing support of even the most basic product aimed at a national audience can be overwhelming. Unless you are independently wealthy or are willing to mortgage your home (and every thing else), you might investigate the possibility of joining forces with a vendor that has an established distribution and support network.

For a modest investment of \$2,000 to \$5,000, you can test the water by leasing a booth at a regional trade show and placing small ads in a few trade publications. Be forewarned; unless your product is aimed at an untapped audience or has some very seductive features, the response may be less than enthusiastic.

Q Six months ago I was promoted to a new MIS long-range planning position. During the last two months the director and I have been meeting weekly to outline the goals and objectives for our department.

We're having trouble distinguishing between the two and, as a result, are making little progress towards developing a long-range plan.

Could you help us delineate between

goals and objectives?
The classic approach to any planning activity is to follow this proces compile a mission statement; identify objections that more fully define the mission statement; state goals in terms of results; set strategies by which to accomplish the goals; then identify specific tasks that complement the strategies

An objective might be to provide an acceptable response time to online users. The goals supporting this objective might be to keep response time under 1.5 seconds 95% of the

In practice, the distinction between objectives and goals becomes blurred when writing MIS long-range plans. Don't fall into the trap of arguing the distinction ad infinitum. If the objective lends itself to support-ing goals (or vice versa), then make the distinction. If it does not, consider documenting the two as a single objective-oriented statement.



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CALENDAR

**WEEK OF OCT. 21** 

OCTOBER 21-24, TO-RONTO — National Retail Merchants Association Re tail Systems Technology & Communications Confer-Conference. Contact: National Retail Merchants Association,

100 W. 31st St., New York, N.Y. 10001. OCTOBER 21-24, MIAMI

NEWS

 International Data
 Corp.'s 1984 Fall Executive Conference. Contact: Diane Testa, International Data Corp., 5 Speen St., Framing-

ham, Mass. 01701.

OCTOBER 22, SADDLE
BROOK, N.J. — Dealing
with Vendors & Suppliers. Contact: Performance Seminar Group, 11 Commerce St., Norwalk, Conn. 06850.

OCTOBER 22-23, CHICA-

GO - Software Tools for Distributed Decision Support Systems. Contact: Soft-ware Tools Conference, Suf-folk University, Boston, Mass. 02108. Also being held Oct. 28-29 in San Francisco. OCTOBER 22-23, SEAT-

TLE — **Dbase II.** Contact: The American Institute for Professional Education, Car-

Professional Education, Carnegie Building, 100 Kings
Road, Madison, N.J. 07940.

OCTOBER 22-24, ATLANTA — Fundamentals of
Data Communications. Contact: American Management
Associations, 135 W. 50th
St., New York, N.Y. 10020.

OCTOBER 22-24, WASHINGTON, D.C. — Oxford
Software International
User Group Meeting. Contact: User Group Coordinator, Oxford Software Corp.,

tor, Oxford Software Corp., 174 Blvd., Ha Heights, N.J. 07604. Hasbrouck

OCTOBER 22-24, LOS ANGELES — International Computer Negotiations
Third-Party Leasing Seminar. Contact: International Computer Negotiations, Suite 1707, 200 St. Andrews Blvd.,

Winter Park, Fla. 32792.
OCTOBER- 22-24,
BROOKLYN, N.Y. — Applications of Microcomputers. Contact: Dr. C. Yapijakis, International Society for Mini and Microcomputers Symposium, School of Engineering, Pratt Institute, Brooklyn, N.Y. 11205.

OCTOBER 22-25, WASH-INGTON, D.C. — Software Development and Mainte-nance in the Federal Government. Contact: U.S. Pro-fessional Development Institute, Software Development in Government, 1620 Elton Road, Silver Spring, Md. 20903.

OCTOBER 22-26, NEW YORK — Structured Analysis & Design Techniques. Contact: Elise Rabalais, Learmonth & Burchett Manage-ment Systems, Inc., Suite 405, 2800 N. Loop W., Hous-

ton, Texas 77092.

OCTOBER 22-26, WASH-INGTON, D.C. — How to Develop an Effective Long-Range Data Processing Plan. Contact: Dr. Robert Keston, Keston Associates, 11317 Old Club Road, Rockville, Md. 20852.

OCTOBER 22-26, NEW OCTOBER 22-26, NEW YORK — Application Programming. Contact: Sysed, Inc., 35 W. 35th St., New York, N.Y. 10001.
OCTOBER 22-26, BURBANK, CALIF. — Application Development. Contact:

IMS Consulting, Inc., 16530 Ventura Blvd., Encino, Calif.

91436. OCTOBER 23. HAS-BROUCK HEIGHTS, N.J. -Service Management Semi-nar and Trade Show. Con-tact: Mike Urban, Global Ultimacc, 4 North St., Waldwick, N.J. 07463.

OCTOBER 23, NEW YORK — T-1 Carrier Strate-gies: The New Networking Imperative. Contact: DMW Group, Inc., 2020 Hogback



Road, Ann Arbor, Mich. 48104. OCTOBER 23-24, BOSTON — Information Centers. Contact: Software Institute of America, 8 Windsor ., Andover, Mass. 01810. OCTOBER 23-25, LOS ANGELES

— Decision Support Systems. Contact: Software Institute of America, 8 Windsor St., Andover, Mass. 01810

OCTOBER 23-25, WASHING-TON, D.C. — Selecting a Local-Area Network. Contact: Marketing Manager, Technology Concepts, Inc.,

County Road, Sudbury, Mass. 01776. OCTOBER 24-25, NEW YORK — IBM vs. AT&T: Round One. Contact: Marilyn Chasteen, The DMW Group, Inc., 2020 Hogback Road, Ann Arbor,

OCTOBER 24-26, BOSTON — Experts on Networks. Contact: Technology Transfer Institute, 741 10th

St., Santa Monica, Calif. 90402. OCTOBER 24-26, CHICAGO — Implementing and Managing Information Centers. Contact: American Management Associates, P.O. Box 319, Saranac Lake, N.Y. 12983.

OCTOBER 24-26, ST. LOUIS -Software Quality Assurance Semi-nar. Contact: Gilbert & Associates, 10812 Olive Road, St. Louis, Mo. 63141

OCTOBER 24-26. WASHING-TON, D.C. — Equal Access: Lessons Learned in Charlestown, Minneapolis and Other Equal-Access Mar-kets. Contact: Telestrategies, Inc., Box 874, 6842 Elm St., McLean, Va. 22101.

OCTOBER 25-26, ATLANTA —
The Sixth Annual Atlanta HighTechnology Venture Capital Conference. Contact: Betty Parker. Department of Continuing Education, Georgia Institute of Technology, Atlanta, Ga. 30332.

OCTOBER 25-26, BOSTON How to Plan and Utilize Your Voice System. Contact: Probe Research, Inc., P.O. Box 590, Morristown, N.J.

OCTOBER 25-30, COLOGNE, WEST GERMANY — Orgatechnik Cologne '84: Fifth International Office Trade Fair. Contact: Messe und Ausstellungs-GmbH Koln, Postfach 21 07 60, 5000 Cologne, West Germa-

OCTOBER 26, NEW YORK — Automating the Not-for-Profit Sector. Contact: Center for Management, Box 520, 17 Lexington Ave., New York, N.Y. 10010.

OCTOBER 26, BOSTON - Ergonomics. Contact: QED Information Sciences, Inc., QED Plaza, P.O. Box 181, Wellesley, Mass. 02181.

#### **WEEK OF OCT. 28**

OCTOBER 29-30, SAN FRANCIS-CO — Future Trends & Opportuni-ties: The Next Five Years in Telecommunications

Microcomputers. Contact: Creative Strategies International, 4340 Ste vens Creek Blvd., San Jose, Calif. 95129.

OCTOBER 29-31, BOSTON Data Analysis. Contact: QED Information Sciences, Inc., QED Plaza, P.O.

Box 181, Wellesley, Mass. 02181. OCTOBER 29-31, NEW YORK Microcomputer Data Base Management Systems. Contact: Software Institute of America, 8 Windsor St., Andover Mass, 01810.

OCTOBER 29-31, TON, D.C. - Strategic Planning for Telecommunications. Contact: Technology Transfer Institute, 741 10th

St., Santa Monica, Calif. 90402.
OCTOBER 29-31, WASHING-TON, D.C. — Testing Computer Software: Producing Defect-Free Systems at Minimal Cost. Contact: U.S. Professional Development Insti-Testing Computer Software, 1620 Elton Road, Silver Spring, Md.

OCTOBER 29-31, LOS ANGELES — Financial Information Systems: Integrating Personal Computers. Contact: National Institute for Management Research, P.O. Box 3727, Santa Monica, Calif. 90403.

OCTOBER 29-NOVEMBER 2, NEW YORK — CICS Macro-Level Programming. Contact: Sysed, Inc., 35 W. 35th St., New York, N.Y.

OCTOBER 29-NOVEMBER 2, OR-LANDO, FLA. - IDMS-DC Programming Workshop. Contact: Steve

Harris, Harris Education Center, Suite-507, 6220 S. Orange Blossom Trail, Orlando, Fla. 32809.

OCTOBER 29-NOVEMBER 2, WASHINGTON, D.C. — Compara-tive Data Base Management Sys-tems. Contact: Chip Blouin, George Washington University, Washington, D.C. 20052

OCTOBER 29-NOVEMBER 2, WASHINGTON, D.C. — Microcomputer Application Workshop: Evaluating Microcomputer Software Packages. Contact: Chip Blouin, George Washington University, University, Washington, D.C. 20052.

OCTOBER 30-31, DALLAS — Competitive Edge Sales Seminar. Contact: Teleconnect Magazine, 12

W. 21 St., New York, N.Y. 10010. OCTOBER 30-NOVEMBER SAN FRANCISCO - Integrated PBXs and Desktop Terminals. Con-

tact: John A. Gutman, Probe Research, Inc., P.O. Box 590, Morristown, N.J.

OCTOBER 30-NOVEMBER 2, SYDNEY, AUSTRALIA - Seventh International Conference on Computer Communication. Contact: Seventh International Conference on Computer Communication. 52C278, P.O. Box 3509, New Brunswick, N.J. 08903.

OCTOBER 30-NOVEMBER 2. NEW ORLEANS — The 17th Annual Microprogramming Workshop. Contact: Institute of Electrical and Electronics Engineers Computer Society, P.O. Box 639, Silver Spring, Md.

OCTOBER 31-NOVEMBER SAN FRANCISCO - 1984 Voice Messaging Tutorials. Contact: John A. Gutman, Probe Research, Inc., P.O. Box 590, Morristown, N.J. 07960.

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satisfaction with product performance as well as ser-vice and support. The service and support ratings are especially significant in that they polled user votes in the categories of vendor responsiveness, training and documentation—areas critical to trouble-free system operation. Data Design has consistently been rated the best in these categories in nationally recognized independent software surveys.

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## **EDITORIAL**

## An exemplary conference

Some random thoughts and observations on the recent Information Management Exposition & Conference, a.k.a. Info '84.

First of all, New York, and the coliseum in particular, is still a great place to host a conference the size of Info (35,000+), a DP manager's show second in magnitude only to the National Computer Conference. Spreading out the hundreds of vendor exhibits over four floors is vastly superior from the attendee's perspective to the zeppelin field effect of NCC, where simply navigating the massive show floor requires a Ph.D in logistics.

The seminars and work sessions, though not heavily attended at Info, were generally well planned and well executed — with one glaring exception. At a session the morning of Oct. 3, about 50 attendees sat and waited to listen to a panel discuss the use of information as a strategic weapon. The problem was that the panel and session chairman never showed up. Though apologetic, a conference spokesman could offer no explanation to the irate attendees. But this was the exception, the rule being good organization of the seminar schedule.

Eighteen dollars and fifty cents (plus tip) for a hamburger, french fries and a beer? So asked one Computerworld writer almost incredulously when the check for a midday meal was presented to her. Well, New York may not be the ideal conference site in every respect, but it sure beats Las Vegas in July.

A couple of other observations from the conference floor:

what? Of just about everything in their line of sight, according to a floor survey Computerworld conducted. As the trappings of computing power have filtered to some degree out of the DP shop and into end-user departments, DP managers have felt increasingly uneasy about the erosion of their control of information management. But the DP managers who address a company's most critical issues, such as the broad-scale, planned implementation of micros, will earn corporate management's respect and therefore cooperation.

Managers are carefully choosing spending options in the face of modest budget increases. Another Computerworld floor survey revealed that managers are finding packaged software more to their liking. Less flexible and application-specific than the homegrown variety of software, it's also generally cheaper and can do many jobs adequately. Managers also revealed their anticipation of modest budget increases, especially outlays for salary increases. Comprehensive studies have borne similar predictions [CW, Sept. 17]. Most importantly, managers appear to be planning for the future in this regard.

Like so many conferences and exhibits, there was much for managers to see and do at Info '84. Luckily, the show was organized and run in such a way that things could, in fact, be seen and done.



#### LETTER

#### Believe in documentation

The series of articles and features concerning documentation [CW, Sept. 10] was most interesting, very apropos and informative. I am sure that nearly every manager in the industry will agree with the expressed opinions — and go on to other more pressing topics.

From my faltering first efforts in 1950, I have probably written about 40-umpteen thousand words for documentation efforts. I tried to include sex and violence in my documents, but most of it is probably unread except in a few enlightened installations.

The help wanted advertisements in the same issue highlight the problem most accurately. Besides those specifying all the acronyms plus the usual "excellent oral and written communications

skills," I believe there was only one advertisement concerned with documentation.

One must wonder if managers and project leaders truly believe in documentation.

G. M. Easley Huntsville, Texas

Computerworld welcomes letters from its readers. Preference will be given to typed, double-spaced letters of 150 words or less; they may be edited for the purposes of clarity and brevity.

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## **VIEWPOINT**

## Internships pay dividends for everyone involved



number of technical colleges maintain internship programs so their students, usually in the semester prior to graduation, can gain experience in an actual information processing environment prior to joining the work force. If such a facility is located in your area, using these interns can produce an array of benefits for both your organization and for the interns. This can be an opportunity to develop an environment where everybody wins.

The use of interns can prove to be especially productive if you have a functioning information center. Because the interns will have had considerable technical training, they can, with a limited amount of orientation to your particular information center environment, accept assignments from the information center clients. With the help and supervision of those clients, they can produce very solid work.

As is the case with many information processing issues, there is no absolutely correct way to carry out this effort. One method that works well is to have the information center client act as the manager of the project. In this situation, the information center employees provide the required technical orientation and, where necessary, provide assistance to the interns.

This assistance from members of the information processing department should be limited; one of the benefits to the interns is the opportunity to solve problems on their own. Too much assistance on the part of information processing employees will thwart any opportunity to exercise some initiative.

Murray is director of management information services for Rayovac Corp., Madison, Wis., and author of Management Information Systems as a Corporate Resource, published by Dow Jones-Irwin.

The client is responsible for producing the design of the proposed system. Once the design (which may be little more than a concept and some supporting documentation) has been finalized, the intern and the client get together to review the project. The goal is to determine if there is mutual interest in the project and if the client and the intern feel they can work comfortably together. This is important. If the intern does not have an interest in the project, the final result may be something

The art in developing and delivering information systems is the ability to manage the entire project and to deliver, on time, that which is required.

less than a good job. The chemistry between the intern and the information center client is also important; if either party feels uncomfortable about working with the other, some other arrangement should be made.

The rules of the assignment should be kept simple. The client agrees to provide support and sufficient time to check on project progress, to review output and to be available to answer questions. The intern agrees to produce the system, write the programs and provide the required documentation.

The school and the organization will usually have an agreement as to the specified number of hours the intern will be allowed to devote to the project.

Given that circumstance, it is important these projects be structured and the deliverables agreed upon in advance, so that the project can be completed within the alloted time, given reasonable dilicence on the project can be completed within the structure.

diligence on the part of the intern.

Someone from the information processing department should review the proposed project to

ensure the practicality of its completion within the alloted time. It should be agreed, however, that if the project is not completed within the alloted time, the intern will provide the required additional time to complete the project. The determination of the final grade for the student is, of course, dependent to a degree upon the successful completion of the project. Therefore, it is quite reasonable to insist on completion. After all, one purpose of this exercise is to attempt to portray a real-world situation.

When interns are used in an organization, they are most always assigned to the systems and programming maintenance effort. While this can be helpful to MIS and while the intern does gain some experience, the use of interns in the information center setting can be more rewarding and productive

Why? First, because the intern has an opportunity to see a total (albeit small) project through from beginning to end. In addition, he gains an opportunity to work in an interactive environment and to use some of the fourth-generation programming tools that may not be available at his school. Perhaps the most significant value of this pro-

Perhaps the most significant value of this process is the opportunity to gain experience dealing with information processing clients. The art, if there is any, in developing and delivering information systems is in managing the entire project and delivering, on time, that which is required. Even though this is a small project, the experience can be very beneficial.

Does this process work? Our experience shows a growing interest on the part of information center clients to obtain the services of interns. The first several times we had interns available, we did have some difficulty in placing them; now, we have a waiting list of clients looking for interns. We also see an increasing interest on the part of interns to accept such assignments. Indeed, everyone does appear to win in such an environment.

One other important aspect of this process is that it gives members of the information processing section an opportunity to observe the work and the potential of the various interns for consideration for future employment.

## As with MIS, OA payoff will come with centralization



hat with all the office products pouring out of vendor factories, you would think that office workers are losing jobs by the thousands on the basis of the well-worn, but quite erroneous, postulation that office automation is synomonous with productivity.

As many burnt-out office systems analysts will testify, in many organizations, the cadre of staff continues to build in spite of substantial increases in overhead costs for newly installed hardware.
"Where's the beef?" ask the big boys. "When do

"Where's the beef?" ask the big boys. "When do we see the big bottom-line payoff from this OA?" A legitimate question to be sure — and one worth addressing.

Of course, everyone sees some important benefits coming into the office today, some of which are worth noting for the record: the "intelligent" typewriter, the compact laser printer, the cellular telephone, the portable personal computer. But executives expect, right or wrong, a much larger return because the aggregated investment in this

hardware is substantial enough to reach soon, if not aleady, the monumental proportions of a supermini installation with all the bells and whistles.

Some professionals wring their hands, shrug their shoulders and produce a mellifluous answer to assuage the tormented executive brows, like: "Sorry about that, but you must rid yourself of your concerns and accept that the initial outlay for hardware and support is just an ante to get into the office automation game. You must prepare yourself for more heavy expenditures and manpower commitments. After all, your competitor is doing it, and you must do so as well."

#### A better answer

But that's not a good answer, even though the assessment is probably true. A better answer lies within the history of the data processing industry, as a matter of fact, within several cycles of the same

You may be too young to remember, but nearly three decades ago, IBM announced the ultimate machine, the one that purportedly represented the entry level for all major businesses. (I remember well some of the sales literature that indentified the IBM 1401 as the "management information system of the future.") For the record, the 1401 was loaded with punched card reader plus all of 4K bytes of random-access memory, compared with the PCjr, whose entry-level configuration is 64K bytes.

What happened is that the machinery was highly successful, very reliable and did a great job for

the customers. And so the business chieftains bought the machines in droves, until one day, the accountants tallyed up the totals and found that the outlays were astronomical. Pressures began mounting on IBM and the rest of the vendors to come forth with a single machine that would cut costs through centralization, performing the following tasks, among others:

Handle many applications simultaneously, so that the hardware investment would be limited to more RAM on a single machine, instead of multiple stand-alone mainframes.

■ Provide a single set of operating system programs for all applications both to serve as a vehicle for standardization and to cut redundant support costs for multiple systems.

Offer terminal communications so that users have immediate access.

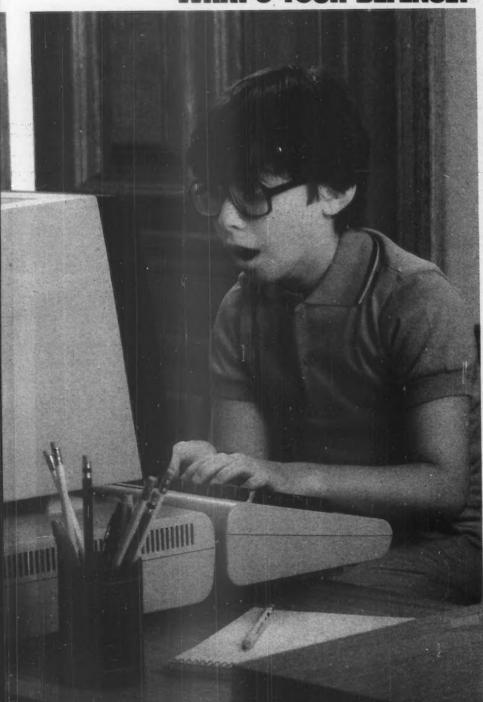
The result? The third-generation IBM 360 and its competitors, which, after the bugs were more or less cleared out of the operating system, at least gave the customers their money's worth.

The moral of this story is that the OA standalone hardware saga is something of the same ilk as the 1401 odyssey: Benefits have been achieved, and the investment has paid off, not only in faster paper work processing but also in the acclimatization of the staff to the onset of the electronic office. Having achieved these initial goals, it's time to seek further gains through some level of centralization, not this time at the corporate data center, but rather in business offices that will control fairly complex local-area networks.

Stone is an independent management consultant, educator and writer, specializing in DP human communications and personnel development, based in Washington, D.C.

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VMCENTER. It's not much fun for the boss's kid. But it can be a lifesaver for his dad—and for you.

For more information on VMCENTER, call or write VM Software, Inc., 2070 Chain Bridge Road, Suite 355, Vienna, Virginia 22180, telephone (703) 821-6886.



## Five factors define micro-mainframe links

Levels offer planning horizons; aid users in making system decisions

By Raymond P. Wenig

The confusing world of microcomputermainframe links can be better clarified by breaking it into a five-level architecture These levels provide planning horizons for potential users of the micro-mainframe connection and supply two key benefits: Users have a much better understanding of the architectural choices available, and the choices allow informed users to influence vendors to produce the technologies they need.

Vendors are critical factors in supply-

Wenig is president and technical director of International Management Service Inc. in Framingham, Mass. This article served as the basis for a speech at the recent Federal Computer Conference.

ing micro-mainframe connections. When a user asks a vendor how to connect a micro to a mainframe, the vendor will usually present his method. Most users will simply accept the vendor's recommendation with out investigating the other architectural choices. A different vendor will usually support a different connection technology Knowing which way is best for a specific situation is the end user's responsibility.

The following is a synopsis of the five levels. The primary role of the microcomputer is to provide interactive user services (the user's window on the world), while the mainframe performs the tasks of aggregation, summarization, integration, data base management and main data storage. The objective is to obtain the advantages of both systems in a cohesive and cooperative fashion.

■ The simplest connection forces the

smaller machine to assume a role that is favorable, or dictated by, the larger ma-chine. Normally this is done through terminal emulation, in which the micro is made to look like a terminal supporting the protocol of the mainframe.

This method of connection is slow, wastes power and can be very displeasing to the user. It also creates a high overhead on the mainframe, which has to deal with all the details of the relationship and waste resources as though it is operating with a dumb terminal rather than an intelligent computer.

In the second level, the relationship is a little smoother through use of more of the mutual power in the two machines. This is normally called file passing. In this form, one machine, usually the junior ma-chine, submits a request to the mainframe

Cincom Systems, Inc. has added a purchasing module to its line of manufacturing software/64

#### INSIDE

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### **DEC's Baseway** links controllers with applications

- Digital Equipment Corp. has announced software designed to integrate industrial controllers with manufacturing applications.

According to a spokesman, DEC's Baseway software is intended to serve as the core of a manufacturing environment and as a framework for automated factory growth. It provides plant managers, engineers and factory floor personnel with flexible networking and applications sharing capabilities and a common user interface, according to a spokesman.

The Baseway product set consists of three components: the Shop Floor Gateway; the Baseway Application Software and Programmable Device Support. The Shop Floor Gateway is said to be an intelligent hardware and software communications device that runs on DEC's PDP-11 system and acts as a translator between

See DEC page 75

### Despite maintenance faults, Cobol remains entrenched in business DP

No one fourthgeneration lan-

guage can replace Cobol.

NEW YORK - While fourth-generation languages offer great flexibility and ease of use, even their advocates say they will have a tough time displacing Cobol.

Cobol is the entrenched language for about 80% of business data processing in the U.S. Its biggest drawback is the difficulty of modifying and docu-menting Cobol programs, according to a panel of supporters and critics at the recent Information Management Exposition & Conference in

New York.

Cobol is no longer the clear and easy-toread language that it was intended to be when it was developed in 1959. So programmers are constantly "reinventing the wheel" when they rework Cobol programs, said Jerry Sitner, president of Clarity Concept Systems in New York.

Only about 30% of Cobol's potential is used, Sitner claimed. If coded consistently and documented well, Cobol programs would require far less maintenance, he asserted. In many installations, maintenance consumes more than 50% of the program-

ming resources.

Thomas Nies, president of Cincom Systems, Inc. of Cincinnati, a vendor of the Mantis fourth-generation language, agreed that Co-bol will remain popular for some time. But eventually, its high maintenance cost will outstrip the cost

of writing a new system in a more productive language, he said. Nies added that no one fourth-generation language can replace Cobol. Rather, several different lan-guages are needed to handle different tasks with varying degrees of power. Powerful procedural languages will be used to write structured systems software, while

See COBOL page 76

#### MVS/VS1 Users

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### Cincom purchasing module out

CINCINNATI — Cincom Systems, Inc. has announced that the purchasing module of its Manufacturing Resource Planning System is now available. The software runs on IBM mainframes under IBM's DOS or OS operating systems using Cincom Systems' Environ/1 data communications monitor or IBM's CICS. It also runs on Digital Equipment Corp.'s VAX-11/780, VAX-11/780 or VAX-11/780 under DEC's VMS/FMS operating system.

The system includes the following components: purchased-item definition, vendor definition and sourcing, quotation management, materials planning and requisition control, purchase order management, receiving control and vendor analysis. The system also provides a single text function to store and communicate free-format information. Text can be accessed by text processing tools such as Cincom's Mantext.

Prices for the system are \$50,000 to \$60,000 for IBM environments and \$21,000 to \$33,000 for DEC environments. Cincom is at 2300 Montana Ave., Cincinnati, Ohio 45211.

## SYSTEMS

APPLIED INFORMATION SYSTEMS, INC. VAX Burcom

A software package that allows Digital Equipment Corp. VAX-11 computers to communicate with Burroughs Corp. machines has been introduced by Applied Information Systems, Inc.

Using Burroughs communications protocols, the VAX Burcom runs as a device driver under DEC's VMS operating system and reportedly requires no modification to the Burroughs software. According to the company, the product supports the Burroughs point-to-point conversational and poll-select protocols.

Hardware devices report-Continued on page 65

MANAGEMENT REPORTING/RETRIEVAL CAPABILITY

FOR THE IBM S/38
For more information
Contact Charles White, at:
michaels, ross & cole, itd.
P.O. Box 4533
Oak Brook, IL 60521

### Low-cost DSS available to universities

ATHENS, Ga. — As decision support systems (DSS) generators become commonplace in business, a concomitant shortage of DSS programmers has arisen. Recognizing this, DSS vendors have started to offer their packages to universities at reduced prices — or sometimes free — for use by computer science majors.

So said Hugh J. Watson of the University of Georgia and David P. Christy of Pennsylvania State University, who wrote a working paper entitled "A Survey of University Support Programs Offered by Vendors of DSS Generators." Watson and Christy have compiled information such as vendors, prices, restrictions, compati-

ble systems and support available to universities.

Different vendors support a variety of computers and operating systems, including mainframes, minis and micros from IBM, Burroughs Corp., Digital Equipment Corp., Hewlett-Packard Co., Prime Computer, Inc., Data General Corp. and many others, the authors said. Several

systems can be run on timesharing resources as well.

Some vendors charge nothing or a small annual fee with the restriction that the package is used only for academic purposes.

demic purposes.
For information, write to
the Division of Research, College of Business Administration, University of Georgia,
Athens, Ga. 30602.



Productivity. For years businesses have tried to define it, refine it, unleash its incredible power. Then its incredible power. Then in 1966, the SPSS® Information Analysis System came along. And suddenly, businesses could get their hands on critical information.

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then convert your results into high quality graphs and reports—without any programming experience.

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language commands; your
people spend less time with
the computer, and more
time focusing on solutions.
Described power.



Continued from page 64 edly supported by VAX Bur-com include the DEC DL-11 asynchronous interface and DEC's DUP-11, DU-11 and DP-11 synchronous interfaces. Q-bus versions of the interfaces are supported on DEC Micro/VAX DLV-11, DUV-11 and DPV-11.

Versions are also available for the DEC PDP-11 running under DEC's RSX-11, IAS, RSTE/E and Micro-RSX operating systems.

A permanent license for

the VAX Burcom is \$5,000.

Applied Information Systems, Suite 207, P.O. Box 2584, 500 Eastowne Drive, Chapel Hill, N.C. 27515.

SOFTWARE CORP. OF AMERICA

Data Check Recovery Version 2.0; Fastdasd Version 3.1

Software Corp. of America has announced versions of two products that run on IBM's 370 and larger main-frames under IBM's MVS, MVS/XA, VS/1 or MVT operating system

The Data Check Recovery Version 2.0 is used to recover data that has become unreadable due to permanent I/O errors and to correct soft failures routinely.

The new version incorporates several scanning and reporting features including Scanlogrec, which helps identify and correct problems; the Nofix Option, which reports on data checks without automatically recovering from them; and the Skip Displacement Report, Skip which monitors the condition of a volume.

A permanent site license for Data Check Recovery Version 2.0 is \$9,500.

The company also nounced a version of its Fastdasd direct-access storage device performance tool.
Fastdasd recommends volume reorganizations that place frequently accessed files close together. Features in Fastdasd Version 3.1 include Vsam reporting, dual density volume support and dynamic volume access.

A single CPU license is

Software Corp. of America, 455 Carlisle Drive, Herndon, Va. 22070.

#### **APPLICATIONS PACKAGES**

THE BRIDGE, INC. Trak 2.2

The Bridge, Inc. has introduced Trak 2.2, an enhanced version of its project management software for IBM and compatible mainframes under IBM's CICS or TSO.

Trak 2.2, an on-line, interactive project management system, is said to offer improved proved scheduling techniques. It streamlines the rescheduling process by requiring only a few key-strokes to revise project dates. Using Trak 2.2, project managers can modify a proiect's starting date and the software will automatically recalculate the time line to reflect the changes.

The new version is said to allow managers to enter up to 18 lines of text per screen on the status of the project or other scheduling issues.

Enhancements include greater use of programmed function keys and improve-ments in Gantt charts.

Trak 2.2 costs \$9,500. with lease terms starting at \$360/mo. The company will provide current Trak users with the new version for a small handling charge.

The Bridge, 199 Califor-nia Drive, Millbrae, Calif. 94030

#### COMPUTER NETWORK CORP. COM-MAIL DIVISION **EZ-Letter**

The Com-Mail Division of Computer Network Corp. has announced a letter writer software package for direct mail marketers. EZ-Letter runs on IBM's 370, 3000 and 4300 series computers, re-

gardless of operating system. EZ-Letter generates cus-tomized, personalized letters. It can handle personal, datavariable letters, direct mail packages, coupons, business reply mail, enrollment forms,





Continued from page 65

computer output forms

The price of EZ-Letter is \$30,000. Com-Mail Division, 5185 MacArthur Blvd. N.W., Washington, D.C. 20016.

#### INTERACTIVE SYSTEMS, INC. **Mentor Version 2.8**

Interactive Systems, Inc. has announced Version 2.8 of its Mentor modeling software for Digital Equipment Corp. VAX-11 and Decsystem 10 and -20 processors.

According to a spokesman, Version 2.8 features a tutorial that allows a first-time user to go through the steps of creating or modifying a spreadsheet. The tutorial can be accessed on-line in a split-screen mode.

Also, predefined and user-defined row and column templates have been

added to the system to speed the initial creation of a model

The package's existing multimodel budget functionality was also enhanced to include a set of forecasting routines, including single and multiple regression, time series analysis and exponential smoothing, according to the vendor. The enhancements join the system's existing functions of allocation, consolidation and external file interfacing.

Version 2.8 of Mentor is \$7,500. Interactive Systems, 131 Middlesex Tnpk., Burlington, Mass. 01803.

#### UCCEL CORP. Imagine

Uccel Corp. has announced it will market the Imagine information retrieval system developed by Multiplications. Inc.

According to a spokesman, Imag-ine will be marketed for use with Uccel's IBM mainframe financial appli-An on-line, menu-driven system, Imagine provides query and report-writing facilities. Other features include password security and a data access design that provides greater control of sensitive data, the vendor said.

The system is also said to facilitate on-line access to information across various applications and allow users to tailor ad hoc or recurring reports and queries to their needs. Imagine will be packaged to enable Uccel customers to access specific application or multiple-application data files, including non-Uccel products. Imagine priced between \$15,000 and \$60,000.

Uccel, Uccel Tower, Exchange Park, Dallas, Texas 75235.

#### SPSS. INC. SPSS-X Release 2.1

SPSS, Inc. has announced Release 2.1 of its SPSS-X Information Analysis System that has on-line documen tation tailored to the Digital Equipment Corp. VAX-11 computer under

DEC's VMS operating system.

The SPSS-X on-line documentation facility gives users specific information on how to run SPSS-X in the VAX-11 environment. Covered topics include: the various modes of run-ning SPSS-X, how to direct display output to alternative locations, memory management in SPSS-X, machine resources required for particular tasks, how to assign files and estimate file size and how to access the VMS sort utility to sort SPSS-X cases. The price of 2.1 for the VAX-11 is

\$6,000 with an annual renewal fee of \$4,500.

SPSS has also announced the SCSS data analysis tool for any computer under the Wang Laboratories, Inc. VS operating system. SCSS allows data entry and management and produces tables and graphics. It offers a range of statistical procedures and facilities for data selection and transformation. There are no system limits on the number of variables and observations, so SCSS will handle data bases of any size, the vendor said. The system prompts for information.

The package is licensed for a first-year fee of \$6,000 with discounts for academic and nonprofit organiza-

tions. Annual renewal fee is \$4,500. SPSS, Suite 3000, 444 N. Michigan Ave., Chicago, Ill. 60611.

#### NEW GENERATION SOFTWARE, INC

Pacs for IBM System/38

New Generation Software, Inc. (NGS) has announced that it will market MRM, Inc.'s Planning and Control System (Pacs) manufacturing software with the company's financial applications packages for the IBM System/38.

According to a spokesman, Pacs is closed-loop system that includes data bases facilitating planning and control, master production scheduling, material requirements planning, capacity management, priority dispatch, standard cost and standard job order costing.

NGS offers several accounting applications including general ledger, accounts payable, payroll, fixed as-sets and accounts receivable. NGS packages range in price from \$9,500 to \$19,750. MRM's Pacs is priced at \$75,000.

New Generation Software, 3840 Rosin Court, Sacramento, Calif. 95834.

#### J. L. HAM & ASSOCIATES, INC. **Fixed Asset Control One System**

J. L. Ham & Associates, Inc. has announced its Fixed Asset Control One System for the IBM System/38 computer. This system has been developed in conjunction with Reh-mann, Robson, Osburn & Co. of Saginaw. Mich.

eatures of the Fixed Asset Control One System include the ability to process multiple companies or entities, full support for the federal Tax Act of 1984 and on-line data entry. The system produces reports such as summaries of group activity, acquisition reports that show amounts for

Continued on page 68



## EMPUS-LINK & TEMPUS-DA

yet easy to use tools for corporate micro and main frame computer users. Their synergy and flexibility meet the needs of both non-technical and expert

Tempus-Data's dictionary provides security and access management at the field level for all specified databases and mainframe files. This access restriction is personalized to each micro user.

Tempus-Data can be used on-line to provide quick response to your high-priority requests. Yet, precious mainframe resources can be conserved by deferring less pressing requests to batch mode execution.

Tempus-Link and Tempus-Data's Open Architecture allows DP experts to build complex micro applications where mainframe access is totally transparent to the micro user, and this from virtually any user-designed and packaged micro application.

Tempus-Link's unique virtual disk system gives Tempus-Data users direct on-line and batch access to files stored on their mainframes but written in micro

formats such as CSV and DIF\*\*. Information Manage ment and Data Control suddenly becomes simplified to DP professionals because micro files are now read and written in micro format through existing main frame resources and even without micros.

Micro Tempus recognizes that high quality corporate information is a time-sensitive commodity. Its integrated approach assures that the data provided to the micro user can be kept in synch with the mainframe's version.

Tempus-Link and Tempus-Data from Micro Tempus a modest investment in personal productivity – a cornerstone in developing the office of the future

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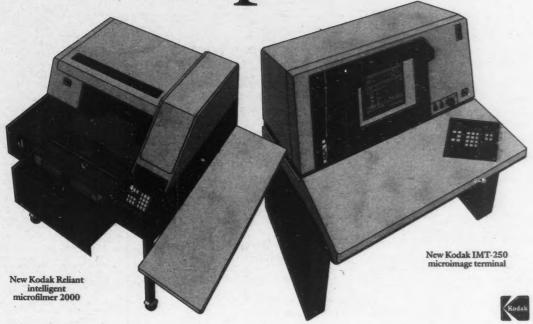
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## They're so smart perators.



#### **New Kodak Reliant** intelligent microfilmer 2000 and IMT-250 microimage terminal.

Here's document capture and retrieval ability so comprehensive it actually directs, guides, and selfcorrects the work of the operators.

The Kodak Whiz Kids possess so much built-in microprocessor power, they automate most of the functions once performed manually by the operator.

They monitor themselves continuously. Communicate with each other. Stop if something is wrong. They tell the operator in plain

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English what went wrong, and how to correct it.

Our new Kodak Reliant intelligent microfilmer 2000 and IMT-250 terminal are the fastest, smartest, most accurate image management machines we've ever made.

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Eastman Kodak Company, Business Systems Markets Division, Dept. DP4616. Rochester, NY 14650.

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  - We capture and store. incoming documents per day.

We retrieve\_ \_documents per day.

#### Continued from page 66

Internal Revenue Service Form 3468, disposal reports that show amounts for IRS Form 4255 and gain or loss schedules for IRS Form 4797, according to the vendor.

The price of Fixed Asset Control One System is \$4,000, which includes source code. Multiple-site pricing is grailable.

J. L. Ham & Associates, Maple Professional Building, 693 Maple St., Plymouth, Mich. 48170.

#### SOFT PRO SYSTEM, INC. Computer-Aided Directory System; Service and Maintenance Tracking System

Soft Pro System, Inc. has introduced two products for Wang Laboratories, Inc.'s VS small business computers running under Wang's VS/ OS operating system.

The Computer Aided Directory System is designed for the preparation and updating of a telephone directory. It is said to eliminate relational coding for producing organizational listings, the vendor said. Features include: automatic search/modify for same name listings in multiple occurrences; on-line inquiry by partial name, telephone number, function or department; production of multisection telephone directory systems; and global modification capabilities for same name listings occurring in multiple places.

The price of the Computer Aided Directory System is \$10,000 per CPU copy.

The Service and Maintenance Tracking System provides service status on preventive maintenance, repair and machine rehabilitation. It includes seven functional components: dispatch; service call tracking; machine tracking; contract management; financial analysis; equipment and asset inventory; and parts inventory.

The price of the Service and Maintenance Tracking System is \$25,000 per CPU copy.

Soft Pro System, 4121 MacDonald Ave., Richmond, Calif. 94805.

### GEOGRAPHIC SYSTEMS, INC. Highway Geofile

Geographic Systems, Inc. (GSI) has announced a cartographic software package that contains information on all interstate highways and major roads in the U.S. Highway Geofile runs on IBM mainframe computers and minicomputers running under IBM's MVS/TSO or VM/CMS and on

Digital Equipment Corp.'s VAX-11 computers running under DEC's VMS.

Highway Geofile is available in two formats. The first is a network format for route optimization analysis, with link (how many lanes in a road or highway, and so forth) and node (whether a location is an interchange, town or city) attributes for transportation and distribution applications. The second format, an overlay for computer mapping applications with GSI's Geomap software, can be used to overlay major roads as points of reference on color-shaded

The package contains more than 40,000 geographic locations and 60,000 links between the locations. Interstate and state roads, privately owned toil roads and some county and local roads are included.

The Highway Geofile package is priced at \$10,000 for the overlay format or \$20,000 for the network format.

Geographic Systems, 204 Andover St., Andover, Mass. 01810.

#### DIGITAL SYSTEMS 1040 Tax Processing System; Estimating; Inventory Control

Digital Systems has announced three stand-alone application software packages. The 1040 Tax Processing System and the Inventory Control packages both run on the Altos Computer Systems, Inc. Altos 586 computer running under Microsoft Corp.'s Xenix operating system. The Estimating package runs on Digital Equipment Corp.'s PDP-11 computers under DEC's RSX11-M and on DEC's VAX-11 computers under DEC's VMS operating system.

The 1040 Tax Processing System is for tax accountants and features 38 federal tax forms and 36 state income tax routines. It will process 1040 tax returns individually or in batches in a multiterminal environment.

Estimating and Inventory Control are for the construction market, although Inventory Control has applications for accountants as well.

The 1040 Tax Processing System price ranges from \$3,500 to \$8,500, the Estimating package from \$6,000 to \$9,000 and Inventory Control from \$1,500 to \$3,500, depending upon configuration.

Digital Systems, 114 E. Gregory St., Pensacola, Fla. 32501.

#### MATTERHORN, INC. MI-Project Release 1.1

Matterhorn, Inc. has announced a version of its MI-Project planning and control software. MI-Project Release 1.1 runs on IBM 370 series mainframes under IBM's DOS or OS

operating systems with IBM's CICS. Enhancements include graphics output and simplified data collection, the vendor said.

Price of the MI-Project Release 1.1 is \$5,500 for the DOS version and \$7,500 for the OS version.

Matterhorn, 9615 Girard Ave., South Bloomington, Minn. 55431.

#### PERKIN-ELMER CORP. MCBA agreement

Perkin-Elmer Corp. has announced a joint agreement with MCBA, Inc. of Montrose, Calif., to make the MCBA Manufacturing System available on Continued on page 70

### PDSFAST: PERFORMANCE

PDSFAST is a super high-speed PDS Management tool developed by Software Engineering of America. Using PDSFAST, hundreds of installations large and small (including 8 of the Fortune 10), are saving 75 to 90 percent of their Elapsed Time, CPU Time and I/O Time in the following areas:

IEBCOPY Usage PDSFAST is a JCLtransparent replacement for lebcopy doing Compression, Copying and Unloading of PDS datasets to Tape or Disk at 5 to 80 times the speed of lebcopy.

SPFCOPY Provides ultra high speed compression under SPF 3.1 WITHOUT REQUIRING AUTHORIZATION.

SMP Processing speeds up ALL LEVELS of SMP processing by 25 to 90 percent.

#### DASD Space

Reclamation PDSFAST can increase DASD space reclamation by 40 to 60 percent by automatically compressing all individual PDS's on a volume at super high speed before defrag and compaction procedures.

DASD Management PDSFAST interfaces with ALL EXISTING DASD MANAGEMENT PACKAGES reducing elapsed times by 75 to 90 percent.

	Elapsed Time	<b>CPU Time</b>	EXCP'S	Job Cost
52 cyl. PDS Compress				
lebcopy	67 min. 18 sec.	12 min. 27 sec.	103,486	\$131.05
PDSFAST	3 min. 23 sec.	8 sec.	712	\$4.22
12 cyl. PDS Copy				
lebcopy	9 min. 14 sec.	1 min. 20 sec.	10,792	\$18.47
PDSFAST	48 sec.	.7 sec.	122	\$1.75
47 cyl. PDS Unload to	Таре			
lebcopy	58 min.	14 min. 52 sec.	97,253	\$92.05
PDSFAST	4 min. 3 sec.	37 sec.	911	\$5.74
3380 TSO Volume Cor	mpress 2,679 Indivi	idual PDS's		
PDSFAST Driver	11 min. 7 sec.	31 sec.	8,299	\$29.87

Clearly, PDSFAST is the quickest, most efficient tool available for PDS management. Our users tell us that PDSFAST is the most impressive performance product they have seen in years.

PDSFAST is *ultrafast*, *cost effective* and *state of the art*, combining wide ranging performance benefits with transparent operation.

PDSFAST has become the corporate standard at over 500 data centers. We are sure it can benefit your installation.

For further information about PDSFAST please call SEA at (212) 206–7660, located at 150 Fifth Avenue, New York, NY 10011.

SOFTWARE ENGINEERING OF AMERICA



## Making multi-vendor office systems work together requires just one thing.



## Soft-Switch.

The idea seems simple enough: connect all of your office systems so that documents can be freely interchanged for editing, storage, display, and printing. That includes word processors, PCs running word processing packages, and mainframe terminals accessing DCF and PROFS.

Many vendors claim to connect multiple vendors' equipment through "protocol translation." And connect they can, but not communicate. To really communicate requires transforming the document coding so that it is fully editable at the receiving system.

#### Soft-Switch is compatibility

ITI's Soft-Switch is a program product for your IBM mainframe (MVS or VM) that allows users to send documents to other users with document translation performed automatically, to store documents in host libraries, and to retrieve documents from these libraries.

Soft-Switch communicates with IBM, Wang, Xerox, and NBI. It communicates with the MultiMate word processing program on the IBM PC, with DCF and with PROFS; with the IBM 6670 laser printer, and with standard hard copy printers.

Soft-Switch is totally consistent with evolving standards for office systems. In fact, Soft-Switch integrates multi-vendor office environments by first translating a document into IBM's level 3 Document Content Architecture (DCA), and then into the exact format required by the receiving workstation.

#### Soft-Switch solves today's problems

Let's say an analyst prepares a document on his PC with MultiMate. He executes Soft-Switch (which executes in the PC, as well as in the IBM host) and specifies distribution to his secretary's Wang word processor and to the 6670 laser printer down the hall. Soft-Switch provides the micro/mainframe link, transports the document from the PC to the IBM host, translates

the document from MultiMate format to DCA, translates the DCA format to Wang's WPS format and the IBM 6670 laser printer OCL format, and routes the documents to their final destinations.

#### Soft-Switch: a path to tomorrow

Already installed at many FORTUNE 100 companies, Soft-Switch integrates the technologies of protocol translators, text management systems, micro/mainframe links, message switches, and electronic mail systems to provide organizations with integrated office systems.

It's a product you need today, and will, no doubt, need even more tomorrow. To learn more about how Soft-Switch will make your multi-vendor office systems work together, call

1-800-227-3800 Ext. 7028

	egrated hnologies,	Mail to: Integrated Technologies, Inc. 200 North Warner Road King of Prussia, PA 19406.
I want to know how So	ft-Switch can solve my office	integration problems.
☐ 1'd like to see Sof demonstration.	ft-Switch at work. Please c	ontact me to arrange a free, no obligation
-		
	lemonstration, but I'd like more without cost or obligation.	re information on Soft-Switch. Please see tha
get the full details v		
get the full details v	without cost or obligation.	
get the full details v Name	without cost or obligation.	
get the full details v Name Title Company	without cost or obligation.	Phone No

PE's Series 3200 computers. The agreement also makes MCBA Manufacturing System's subset, Distribution and Accounting, available on both the PE Series 3200 and 7000 family of computers running under AT&T's Unix operating system.

The software system consists of 16 separate modules and is designed to provide manufacturing, distribution and accounting tools for a variety of business needs. The system may be tailored to track inventory, control cash flow, handle payroll and provide other essential manufacturing solutions, according to Perkin-

Perkin-Elmer said that each module is priced separately, ranging in price from \$900 to \$6,000.

Perkin-Elmer, 2 Conceanport, N.J. 07757. 2 Cresent Place, INTECOM, INC. Administrative and Accounting Package

Intecom, Inc. has introduced a package said to provide greater functional call-management reporting for the vendor's Integrated Business Exchange (IBX) voice/data line of communication systems.

Administrative and Accounting Package (AAP) uses a stand-alone Perkin-Elmer Corp. 3205 processor with 1M byte of memory and an 85M-. 165M- or 330M-byte disk, the vendor dor said. Linked to the IBX systems by an RS-232C interface, the AAP is compatible with all IBX models utilizing the optional Call Detail Recording (CDR) feature.

The AAP produces reports covering general call accounting, network statistics and accounts receivable. On a single CDR record, up to 28 forms of call information can be stored, the vendor said.

The package is priced at \$72,500. Intecom, 601 Intecom Drive, Allen, Texas 75002.

#### COMPUTER DESIGN & APPLICATIONS, INC. Deltagraph

Computer Design & Applications, Inc. (CDA) has announced a graphics slide creation software package for the medical profession.

Deltagraph can be used with CDA's Maxdelta system and CDA's Microdelta imaging terminals. According to the company, the software package allows medical users to combine patient images with graphics to produce slides for lecturing and diagnostic use. Deltagraph offers 256 colors per display character, selectable text size and a shaded depth perception capability. Graphics slides can be viewed on the Microdelta imaging workstations, or users can produce 35mm slides from an optional imager with the Deltagraph package.
Users can store, retrieve and de-

lete slides from Maxdelta or Microdelta storage or manipulate slides for better display. Deltagraph sells for

Computer Design & Applications, 411 Waverly Oaks Road, Waltham, Mass. 02154.

#### COMPUTER CONSOLES, INC. Timelaw in Law Officenower

Computer Consoles, Inc. (CCI) has announced a module for its Law Offi-cepower software system. Timelaw, a time and billing package, runs on the CCI Power 6/32, Power 5/20 and Power 5/30 computers running under CCI's Perpos operating system.

Timelaw was developed by Verti-soft Corp. of Atlanta. It is an accounting application package that can be integrated into CCI's Law Officepower. Designed for medium- to large-size law firms, the package contains law firm billing, accounting and financial reporting functions. A general ledger package is available as an option to Timelaw

Prices are \$50,000 for the Power 6/32, with an additional \$7,500 for the general ledger, and \$30,000 for the Power 5/20 and Power 5/30 machines, with an additional \$5,000 for the general ledger option.

Computer Consoles, 97 Humboldt St., Rochester, N. Y. 14609.

#### BATTELLE PACIFIC NORTHWEST LABORATORIES Cage/GEM

Battelle Pacific Northwest Laboratories has announced the Computer-Aided Genetic Engineering/Genetic Engineering Machine (Cage/GEM) software for any computer, workstation or graphics device running under Digital Equipment Corp.'s VMS or Continued on page 74

## EasyPROCLIB gave me an extra half day a week! \*



EasyPROCLIB is a unique operating system enhancement that proves that you can please all of the people all of the time

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Because EasyPROCLIB is completely transparent, many users don't know that they have it. But the data center management and staff knowbecause it simplifies their job, cutting down housekeeping time and giving them more time to manage. Since it was introduced six years ago, Easy-

PROCLIB has been installed at hundreds of IBM MVS sites, and wherever it's been installed, it's still at work

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Software Corporation of America

\*Comments from interviews with EasyPROCLIB users

Comment from Software Corporation of America.

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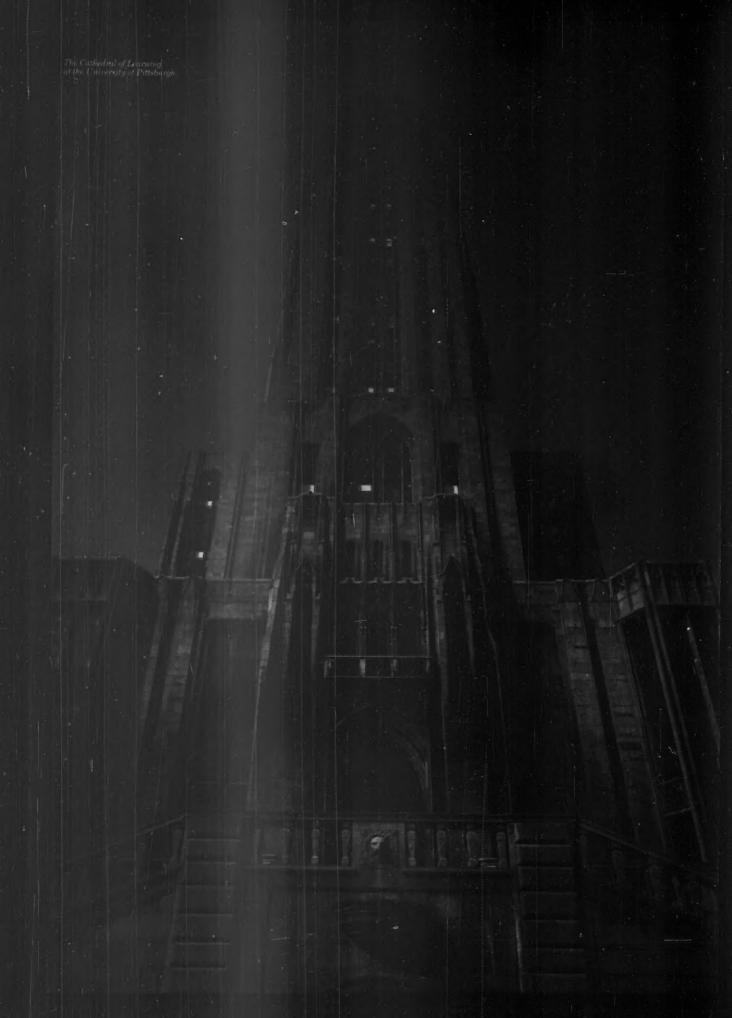
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CW 101



# PRESENTING THE LATEST ADVANCES IN ARCHITECTURAL DESIGN.

Rising above the main campus at the University of Pittsburgh stands a Gothic tower called the Cathedral of Learning. Its exterior owes much to medieval architecture. Yet within its walls, you'll find another kind of architecture—one that's thoroughly modern. It's called Information Systems Architecture, the design principle governing the new technologies from AT&T Information Systems.

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It's all made possible with Information Systems Architecture, the unifying principle designed into every product we make and tying all our systems together. The reasoning behind it can be summed up in three words: communication, distribution and uniformity.

#### INFORMATION SYSTEMS ARCHITECTURE: THE PRINCIPLE

#### Communication

Because all AT&T products are communications based, they can communicate efficiently and effectively with each other and also with products made by other manufacturers like those of DEC and Xerox already being used at Pittsburgh.

Besides being great communicators, they're also great translators. So products from different manufacturers that are otherwise incompatible can communicate with each other, using our equipment as a gobetween. In this way, Information Systems Architecture protects both your past and future automation investments.

What's more, the system is functionally integrated, so various applications, such as Electronic Document Communication and Message Center, can work together and share information.

#### Distribution

Besides functional integration, we also provide function distribution. This allows applications to be distributed to whichever system component is most appropriate and cost-effective. Even to components in different locations, miles away from each other.

And all end-users, no matter where they are, or to which component they are hooked up, still have access to all functions in the system.

#### Uniformity

All our products are designed to be user-friendly, so they're easy to use. But beyond that, we've also made their operation uniform. A person trained in one location on one type of terminal will have no problem operating a different type of terminal located somewhere else. This keeps training costs down and your operation running smoothly.

With communication, distribution and uniformity as our watchwords, Information Systems Architecture guarantees an evolutionary system—one that can keep up with changing needs and changing technologies. That's why the University of Pittsburgh will always be a campus of the future, no matter what the future may hold.

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The University of Pittsburgh, a distinguished academic leader for nearly 200 years, has called upon AT&T's century of communications experience to help them carry on their tradition. They're in good hands. Four thousand designers and engineers formerly at AT&T Bell Laboratories are now working exclusively to develop new business products at Information Systems Laboratories. Information Systems Architecture will give them the framework by which to tie those products into complete business automation systems.

It will provide our sales staff with a planning tool for total automation so that all needs are met, now and in the future.

And, because of our uniform design, the job of the largest, most experienced service staff in the industry will be that much easier.

To find out now how AT&T Information Systems Architecture can put you on the road to total office automation, call 1-800-247-1212, Ext. 198.

#### WHEN YOU'VE GOT TO BE RIGHT



#### **SOFTWARE & SERVICES**

#### ued from page 70

Micro VMS operating systems, or the Unix operating system

According to a spokesman, scientists can use Cage/GEM to simulate and analyze the dynamic relationships between genetic elements and deoxyribonucleic acid sequences. Features of the system include priority windows, color graphics, visual proximity capabilities and other analytical tools

Cage/GEM incorporates computeraided design and human factors engineering techniques with a choice of genetic engineering data bases. Data bases currently available include the National Institute of Health-developed Genbank, European Molecular Biology Laboratories' DNA Sequence and Battelle's Genetics Database, according to the vendor.

Cage/GEM prices vary according

to the client's configuration. Prices for DEC's VAX-11/750 or 11/780 machines range from \$20,000 to \$40,000, and for Hewlett-Packard Co.'s Series 9000 workstations, the price is \$30.000.

Battelle Pacific Northwest Lab-oratories, Battelle Blvd., Richland, Wash. 99352.

#### GEJAC, INC. Arsap Resource Management and Chargeback System Version IV

Gejac, Inc. has announced Version IV of its Arsap Resource Management and Chargeback System. The package runs on Digital Equipment Corp. VAX-11 computers under DEC's VMS 3.0 or later operating system.

Enhancements reportedly facilitate real-time budget management and allow users to examine the status of their computer accounts to provide control over expenditures

Added features include an on-line, on-demand display that shows the current status of computer services expenditures, a status display at lo-goff and on-line budget management capabilities to monitor and control computer use on a real-time basis, according to the vendor.

The price for the package is \$3,995

until Dec. 31.
Gejac, P.O. Box 188, Riverdale, Md. 20737.

#### MICHAELS, ROSS & COLE LTD. MRC-Retriever Release 6.0

Michaels, Ross & Cole Ltd. has announced Release 6.0 of its MRC-Retriever package for use with IBM's CPF 6.0 operating system on the IBM System/38. MRC-Retriever is a standalone module in the MRC-Query series of end-user utilities.

MRC-Retriever allows users to build on-line inquiries into multiple files using any access path. Functions included with Release 6.0 include the incorporation of the shared-access path technology developed in other MRC-Query Series mod-ules, user-designed and modifiable calculated fields, a keyword search facility and a command key option. Other features include Help key documentation, menus, multilevel security, single- and multirecord inquiry modes and windowing capabilities.

Release 6.0 of MRC-Retriever is priced at \$1,140 per CPU.

Michaels, Ross & Cole, P.O. Box 4533, Oak Brook, Ill. 60521.

#### VISTA CONCEPTS, INC. VSPS software bulletin service

Vista Concepts, Inc. has an-nounced a software bulletin service for users of its Vista Securities Processing System (VSPS).

The bulletin service provides VSPS users who support their own VSPS installations with detailed technical information of software bugs and Vista's recommended fixes. Users will receive warnings of difficulties encountered by other VSPS users or discovered by Vista's software maintenance department.

The price of the bulletin service is one-half of the current VSPS monthly license fee.

Vista Concepts, 11 Broadway, New York, N.Y. 10004.

#### DATA BASE MANAGEMENT SYSTEMS

#### TOUCH TECHNOLOGIES, INC.

Touch Technologies, Inc. has introduced an information management system written in Basic that has data management extensions. Intouch works on the Digital Equipment Corp. VMS operating system and supports DEC's Record Manage-ment System (RMS) and Relational Data Base (RDB) systems and userdefined record management systems.

Intouch can be used in dialogue mode to assist noncomputer professionals. It can also be used as a compiled language. The system automati-cally shifts to dialogue mode when commands are incomplete.

Intouch will be available in the first quarter of 1985. Prices are \$4,500 for DEC's Microvax 1; \$7,900 for VAX-11/725 and 11/730; \$14,900 for VAX-11/750; and \$25,900 for VAX-11/780. Purchase includes one year of support.

Touch Technologies, Suite 101, 609 S. Escondido Blvd., Escondido, Calif. 92025.

#### INFORMATION BUILDERS, INC. Focus interface

Information Builders, Inc. has announced an interface between its Focus product and Intel Corp.'s System 2000 data base management system.

According to the company, the interface permits Focus users running under IBM MVS and TSO to execute Focus reporting and data analysis functions against the System 2000 data bases. Functions include report writing, ad hoc queries, graphics, sta-



resources and data security. • Integration of production files into an on-line informational data base. For more information, call (617) 547-8050.

#### MULTIPLICATIONS \*

bas selected Imagine for use with its application software products. Multiplications has offices in the following locations: Cambridge, MA. Atlanta, GA. New York, NY. Oakland, CA. Rochester, NY. Toronto, CN.

#### **SOFTWARE & SERVICES**

tistics and financial modeling.
Using the interface, data from System 2000 files can reportedly be downloaded to personal computers with Information Builders' Foctalk microcomputer-to-mainframe link. System 2000 data can be structured in Software Arts, Inc.'s Data Inter-change Format, Lotus Development Corp. or standard Ascii formats

The interface uses nonexclusive read-only access. It also supports dynamic file inversion and System 2000 passwords. Focus security is said to be fully supported, allowing an installation to limit System 2000 access at the file, segment, field and value-within-field levels, the company

The Focus interface supports multiple simultaneous users and can run in both batch and on-line modes. It is priced at \$8,500 or can be leased at \$240/mo.

Information Builders, Broadway, New York, N.Y. 10001.

#### CHICAGO AERIAL SURVEY, INC. CAS-T-100

Chicago Aerial Survey, Inc. (CAS) has announced a translator program that allows IBM mainframe users with IBM's Distribution Facility Information System (Dfis) to use Intergraph Corp.'s Intergraph data entry system, running on Digital Equip-ment Corp.'s VAX-11s with DEC's VMS operating system. It allows for data base creation by converting Intergraph format records to Dfis.

The translator is designed for users involved in automated mapping and facilities management data conversion. The CAS-T-100 is available as software or as part of CAS' data

#### **DEC** from page 63

specific shop floor devices and a host computer.

The Gateway supports two communications protocols, the Allen-Bradley Data Highway and the Gould, Inc. Modicon Modbus programmable controller network. The Gateway interprets data from each of these devices and translates it into a common data structure. Integration is achieved by communicating this data via Decnet communications to the Baseway Application Software Bus for use by applications such as Programmable Device Support.

The Baseway Application Soft-ware Bus, which runs under DEC's

VMS operating system, communi-cates with control devices on the shop floor and provides a common means of sharing information. It also provides an audit trail that tracks activities within the computer system

and on the shop floor.

The first manufacturing application supported by the Bus is DEC's Programmable Device Support, Programmable Device Support, which is a menu-driven system that is capable of uploading and downloading, reading and writing, com-paring, documenting and maintaining a library of "ladder logic" programs.

The minimum configuration required to run the Baseway product set includes a VAX-11/750 with VMS and a PDP-11/24 with DEC's RSX-11S operating system. The Shop Floor Gateway component is priced at \$4,000, Programmable Device Support at \$4,000 and the Baseway Application Software Bus at \$18,000. DEC is located at 146 Main St., Maynard, Mass. 01754.

conversion services.

Price of the CAS-T-100 ranges from \$40,000 to \$60,000.

Chicago Aerial Survey, 21 Road, Des Plaines, Ill, 60018. 2140 Wolf

#### UNIQ DIGITAL TECHNOLOGIES Unify Release 3.1

Uniq Digital Technologies has an-nounced Release 3.1 of its Unix-based Unify relational data base management system (DBMS).

Unify is said to run on Digital Equipment Corp. VAX-11 and PDP-11 processors under both AT&T and University of California at Berkeley versions of the Unix operating sys-Unify combines a relational DBMS with fourth-generation applications development facilities.

Features of Release 3.1 include the addition of a report writer, a data manipulation language (DML) and Paint, a screen painting facility that allows users to design screen forms interactively. Using DML statements, a user can add records and delete ex-

isting records without programming.
Release 3.1 of Unify is priced between \$1,995 and \$14,500.

Uniq Digital Technologies, 28 S. Water St., Batavia, Ill. 60510.

#### SIR. INC. SOL+

Sir, Inc. has added a module to its Sir/DBMS package. The SQL+ relational query system, an expanded version of IBM's relational Sequel query language, is now included in the Sir/DBMS for Control Data Corp.'s Cyber series running under CDC NOS; Data General Corp.'s MV series running under DG AOS/VS;

Digital Equipment Corp.'s VAX-11s running under the DEC VMS and the University of California at Berkeley Unix 4.2 systems; Hewlett-Packard Co.'s HP-9000 running under HP-UX; IBM and IBM plug-compatible computers running under IBM OS/VS and VM/CMS; Prime Computer, Inc. com-puters running under Prime's Primos; and Sperry Corp.'s 1100 series run-ning under Sperry's Exec. Prices of the Sir/DBMS packages

with SQL+ range from \$18,000 to

\$60,000, with discounts available. Sir has also announced the conversion of its Sir/DBMS to run on Apollo Computer, Inc.'s Domain workstations under Apollo's AUX/Aegis. The SQL+ module is included.

Price of the Sir/DBMS package in a multiple-node system is \$25,000.

Sir, Suite 400, 820 Davis St., Evanston, Ill. 60201.

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#### **SOFTWARE & SERVICES**

#### COBOL from page 63

flexible, nonprocedural languages will be more productive for iterative applications development, he said.

Nies further asserted that compilers are the cause of much of the pro-gramming crisis that exists today. Compilers were needed when computers were slow and memory was scarce, he noted. But because they require constant relinking and recompiling of programs, they are inadequate for today's fast-changing DP environment.

Nies said the use of Cobol has created a bottleneck in systems develop-ment. It is the Cobol programmer who is responsible for integrating the functions of applications, telepro-cessing monitors and data base management systems, he noted. When in structions are converted to Cobol, guage does all the tasks of Cobol, so

they must be poured through the compiler's machine language funnel. A fourth-generation, interpretive language uses no compiler and side-steps the bottleneck, he said.

Kathyrn K. Miller, manager of a program development group at Mobil Oil Corp. in Fairfax, Va., said her staff developed a new system of 126 programs in 247 days using Information Builders, Inc.'s Focus, Execucom Corp.'s IFPS and SAS Institute, Inc.'s SAS. Doing the same task in Cobol would have taken more than 2,000 days, she said.

Easy-to-read fourth-generation languages allow quick changes as well as quick development, she said. By using them, she and her staff have "almost eliminated the mainte-

nance backlog."
But no one fourth-generation lan-

none of them are candidates to replace Cobol, she added. Neverthele she believes fourth-generation languages are here to stay and "are get-ting better every day." Their main drawback is that they consume more computer resources. Batch process-ing takes five times as long with a fourth-generation language as with Cobol, she said.

Robert Wagner, programming manager of Furr's, Inc. of Lubbock, programming Texas, a Cobol advocate, said the problem with Cobol is not its inherent limitations so much as "the widespread incompetence in the programming industry.

Fourth-generation advocate Nies agreed. As programmers become proficient in Cobol, they move on to become systems analysts or some other learning position, he said, leaving average programmers to work in Cobol.

#### LINKS from page 63

for a particular file. The request is authenticated, and the file is selected by the mainframe and passed down

Alternately, the junior machine can compose a file using its own native capabilities for text editing, data base management or whatever. It then presents the file in batch form to the mainframe.

The relationship is better than that of the first level in that each machine can operate in native mode as well as in a fairly compressed mode to pass files back and forth.

#### Not interactive

The key problem with this architecture is that it is not interactive; it is essentially a batch file transfer process. But it does work reasonably

■ The third level is the traditional level of distributed data processing, called command transfer. In command transfer processing, one essentially composes a native job run sequence on one machine and then transfers it to the other machine and asks for that sequence of operations to be performed.

Here, the burden on the smaller machine is increased so that transfers can happen more effectively and more interactively. With an operating system like AT&T's Unix at this level, the same set of commands can be used in both processors.

At level four, the relationship is called transparent service. In this level, attempts are made to create, as-semble and transfer relationships between machines in a natural mode. This means all message formatting, commands, controls and actions are automatically serviced by the machines with minimal direct user intervention.

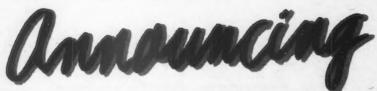
For example, a company would logically build a new hardware box and let that hardware be the intermediary.

A manufacturer of data base machines would want its customers to use them as the intermediary between machines. A communications company would want its network to be the intermediary. Local-area net-works are now trying to be an intermediary between a variety of ma-chines to provide some kind of transparent service. Many new products will debut on the market to support this kind of transparent view of connection in the next three to five

■ The fifth level is not only transparent but is also anticipatory, involving some degree of artificial intelligence.

The micro user pursues informa-tion from existing data bases, and the systems processor has enough intelligence to look ahead and deliver information that might be of interest to the user. Instead of waiting for a request, requirements are anticipated so that information will be readily available and actively downloaded to the micro.

For example, when somebody asks for a record with the name Johnson in it (where there are perhaps 20 different spellings of Johnson), the system intelligently accesses all possible matches based on the phonetic composition as opposed to a key request. Another example is to use a history of types of report requests made by the user to produce the high-frequency reports on a prepackaged basis.



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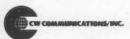
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#### IN DEPTH

## Talking, hearing computers Naturally speaking

Can voice be the ultimate communication medium between man and machine? It's portable and everyone has one. Now if only every computer could talk.

By Hal Glatzer

[At a desk near the window, Sulla is typing letters.]

DOMIN [dictating]: Ready? SULLA: Yes.

DOMIN: To E.M. McVicker and Co., Southampton, England. "We undertake no guarantee for goods damaged in transit. The vessel was unsuitable for the transport of robots, and we are therefore not responsible for spoiled freight. We beg to remain, for Rossum's Universal Robots, Yours Truly."

[SULLA, who has sat motionless during dictation, now types rapidly for a few seconds, then stops, withdrawing the completed letter.]

DOMÍN: Ready? SULLA: Yes.

DOMIN: Another letter . . .

Sulla is a robot in Carel Kapek's 1920 play "R.U.R." She not only understands Domin's voice but transcribes it. Today, computers are the robot secretaries in our offices, but they still can't do what Sulla could. It's not that

they aren't "smart enough." Rather, it's that engineers have not yet solved the interface problem

Like oil in an engine, the interface between computers and people keeps two dissimilar elements from grinding each other down; and like a diplomat, it helps each side to think that the other side speaks the same language. A good interface is neither purely mechanical (a keyboard or mouse) nor purely intellectual (an operating system). Rather, it is something conceptual that is partly hardware and partly software. There isn't yet a name for it.

"User friendliness" is a popular expression,

"User friendliness" is a popular expression, but it is as elusive out of context as "humor" or "beauty." The words "artificial intelligence" are not only self-contradictory, they are too general — like calling everything from limpets to sharks "fish."

Computers and people are learning to understand one another in new ways, and — fortunately — it's the computers that are changing as a result. But people have to















change a little, too.

"People don't realize what computers can do right now. They see computers in science fiction movies using voice-recognition input. But those computer interfaces are here now!" So says Bill Eichen, technical marketing engineer at Votan, a San Francisco-based company specializing in voice recognition and synthesis products. Of course, he admits, the talking typewriter [like Sulla in "R.U.R"] is not here. Computers don't have unlimited vocabularies, and the English language is so vast: You need 100,000 or more words resident in the computer at one But there is a form of voice input that works: the kind that is 'speaker-dependent.'

You train the computer to recognize a voice in the same way you train a dog: repetition and reward.

You speak the digits, special words (such as factory commands or form lines to fill out), and the system loads them into its memory as digital impulses. Then it tries to make comparisons with those stored words each time it hears something. When it succeeds, it is rewarded by being allowed to move on to another task

What the computer does is to sam-ple the signals that come through its microphone. A sample can never b perfect, but then people are not infi-nitely sensitive either. We have a persistence of vision that makes 24 or 30 still pictures per second seem to "move." Sampling voices a few thousand times a second is sufficient to reproduce them.

'I'd like to position voice as the ultimate communication medium between man and machine," Eichen says. "It's portable; we all have it:

and you can use it from all locations even by phone from the desert.

Once a computer accepts voice input, it can run any conventional soft-ware with sounds instead of keystrokes. With a spreadsheet program, a financial officer can ask for changes out loud, using words previously stored in the computer to substitute for the menu options or commands. It can be done now — Votan has put it onto Sorcim Corp.'s Super Calc — but it's limited to the numerals 0 through 9, the arithmetic functions (plus, minus), the letters of the alphabet and a few standard commands.

It forces the user to speak in an unnatural dialect: 278/3.66 com out "two seven eight divide three decimal six six." That's much longer and less convenient -- than entering the numbers on a 10-key pad. It

will be years before a computer can parse an expression like "Twennytreedollasanfifdeenynsens, plusa quawdah, makeshowmuch?" Even if it isolated the first sounds and got \$23.59, what about the "quawdah?" Is it "a quarter-dollar" (\$0.25), or is it "one-fourth of \$23.59?"

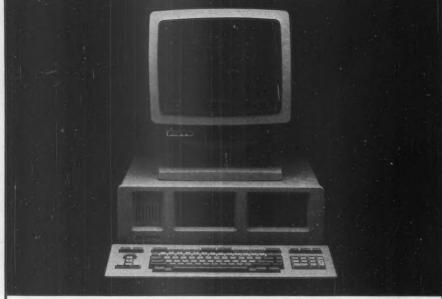
#### Not sophisticated

Human beings take for granted things that would baffle a computer. For a secretary to move the cursor in a word processing program by saying "down three lines, to the 'E' in 'technology,' " the computer will have to grow far more sophisticated than any that presently exists. The sound of the "y" (pronounced "ee") and the name of the letter "E" are homonyms. The computer would have to comprehend the difference and — to respond to the user's needs — choose between the alternatives according to a table of most likely

and least likely possibilities. Eichen and his associates expect that by 1990, they will have reached a different goal: speaker-indepen-dent recognition. That is, no matter who is speaking - even if the computer has never heard that person before - at least a small set of words (the digits, plus "yes" and 'no") will be intelligible. Votan hopes to give its boards a vocabulary that includes the states of the U.S. and the names of colors (for color graphics screens). But it has not solved the problem of varying pronunciation, especially accents

The key apparently lies in the search for the elusive artificial intelligence. Speech recognition today depends upon making voiceprints, which are like fingerprints. A voice print contains information about pitch, frequencies and so forth. When the computer hears a word, it tries to match that with one of its stored images

But the problem of matching voices without a stored voiceprint



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#### Votan answers

Want to teach a computer to speak? You can try it yourself, by calling Votan's demonstration system at (415) 490-7979.

A computer-generated voice welcomes you to the demonstra-tion and asks you to repeat some words: the digits 0 through 9, the words "yes," "no," "California," "Kentucky" and "New York." It asks you to wait for a tone before responding. Once it has recorded two or three versions of each word, it asks you to name one of the three states. If you say "California," it replies: "You said California. The capital of California is Sacramento." Then it asks, "Would you like another demonstration? Answer yes or no [tone]." The voice then responds appropriately to your next word.

If you try this demonstration,

don't use a speakerphone with a voice-activated switch; it can clip the first syllable off of each word that either of you speaks. Humans may adjust for it, and interpolate the missing sound, but the computer can't!

#### How computers sample voices

If you were to speak into an oscilloscope and "freeze" one second's worth of a sound, it might look like the graph in Figure 1.

In practice, a sound may be sampled 8,000 times or more every second. But for simplicity, we'll sample it 10 times and measure just the amplitude (loudness) from the vertical axis. We'll plot the waveform 10 times — once every .1 second — and use just three bits to represent each value.

At the start, the amplitude has a digital value of zero (000). After 1. second, it has a value of 1 (001). After .2 second, it has a value of 2 (010). After .3, a value of 3 (011).

Between .3 and .4 second, the curve rises beyond the value of 3, but drops back to a value of 2 before .4 second has elapsed. So the value we record at .4 second is 2 (010). A faster sampling time — say, 20 times per second — would have been more accurate, but we'd generate twice as many samples, so we would need twice as much computer memory space to store it. After .5 second, the value is 1 (001) again. The subsequent values are 2 (010), 3 (011), 2 (010) and 1 (001), as shown.

The computer stores the values

Linear predictive coding is much more memory-intensive and requires greater computing power, but it is also more accurate and more likely to be used in the future for input that is not speaker-dependent.

in their original order, and when it hears a new sound, it samples that one. Then it compares the two strings of binary numbers against one another. If the second one is the same (000, 001, 011, 010, 001, 010, 011, 010, 011) then it will assume that there is a match and act accordingly. As we have seen, though, the computer may allow for several different curves to be matched, as long as the values at the sampling points are the same.

Another approach to voice recognition is called "linear predictive coding."

In any graph, there are values along the X and Y axes that—when connected—produce a line. If the values change in simple ways, a straight line may be generated; if the values change in

more complex ways, curves result. Most voiceprints are composed of curves, and it is possible to derive equations from them which predict the curve that would result from a similar (though limited) set of sample points. Linear predictive coding finds those equations in the original voiceprint and uses them for comparisons with new sounds.

For simplicity, we'll look at a straight line (Figure 2). The equation that defines the slope of this line is X = 2Y (two increments along the X axis for every one increment along the Y). Let's say that that is the stored voiceprint.

If we introduce a new voice sample and plot some of its points on the graph, we can derive an equation for a line that will connect the points. If we find that it is the same, we can hypothesize that the two voiceprints match. A computer can deal with more complicated equations or curves and match their coefficients much faster.

Linear predictive coding, then, is the prediction of a line, as expressed in computer code. While amplitude/frequency sampling may use a few hundred bits of storage for a single voice print (Votan uses 128; Interstate Voice Products uses 256 bits), linear predictive coding consumes as much as 2K bits per voiceprint.

The Bell system uses linear predictive coding. Linear predictive coding is much more memory-intensive and requires greater computing power, but it is also more accurate and more likely to be used in the future for input that is not speaker-dependent.

That is, it can probably predict the curve of different people's voices better than amplitude/frequency sampling can and, therefore, can match a wider range of sounds.

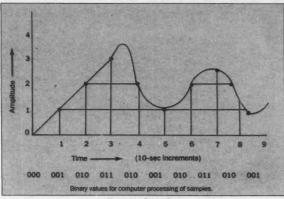


Figure 1. Sampling

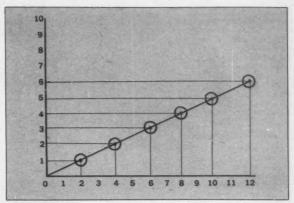


Figure 2. Given these sample points, we can derive an equation to predict where additional points will fall. If the equation for the sample matches the equation stored for the vocabulary word, there is "recognition."

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for comparison is enormous. And the logical rules for interpreting speech are more complicated than native speakers appreciate. Simple plurals (a suffix "s," pronounced "zz") may be easily implemented, but what about irregular plurals ("mice"), slang ("okay") and regionalisms ("a regular coffee")?

DAVID: [from space] Open the Pod Bay door, HAL. HAL: I'm sorry, Dave. I

can't do that. This man-machine dialogue is very different from the one between Domin and Sulla. Superficially, the HAL computer in Arthur C. Clarke's 2001 has a straightforward task: (1) distinguish the words from background noise; (2) adjust for pronounciation and separate each word from its neighbor ("th'pahd"); (3) check the words in a dictionary; (4) parse the sentence (it's not clear until the end that the astronaut is addressing HAL); (5) translate the command into electronic signals: and (6) decide on a course of

action. But it's HAL's response that makes the exchange so complex. HAL does not mere ly reverse the process; it (1) determines what it wants to say: (2) translates its signals into English words; (3) identifies the listener (Dave); (4) experiments with sentence structure (making two sentences instead of one); and (5) uses rhetoric for poignancy ("I'm sorry, Dave") and irony ("I can't do that" really means "I won't do that")

#### Computerized librarian

HAL, in other words, works with human language in what — to a human being — is a natural way. The scientific term for that is "natural language processing," and it's finding its way into the business world in the form of a computerized research librarian.

Given this command:
";TXN 82 Q," the Dow Jones
News/Retrieval Service will
return the stock prices for
Texas Instruments, Inc. in
every quarter of 1982. But
an occasional investor might
not be able to remember the
syntax of that query or may
be so poor a typist as to fumble with the kevs.

So researchers at TI (and at other companies) have developed natural language processors that put the whole operation into English. Using TI's product, Natural Link, the user can enter a complete sentence:
"What were the stock prices for TI for each quarter in

Although it might seem faster to type the ";TXN 82 Q" query, the user doesn't type the whole sentence. He selects the words, one at a time, from a menu in a window: starting with the word

"What"; adding the verb phrase "were the stock prices for"; selecting "TI" from a list of stocks in a portfolio; narrowing the search with the qualifier "for each quarter in" and typing "1982" to complete it.

The screen displays the choices, and the user picks from them. Even with no typing skills, executives can use Natural Link themselves.

"Our aim was to take some artificial intelligence derivatives out of the corporate research lab and bring them to the product level," said Sue Metzler of TI's Dallas research center. The applications best served by natural language processing are those in which there are many different people with different needs — all of whom have to query a single data base.

One key to progress in natural language processing lies in closer and closer approximation of the user's own speech patterns. But the trade-off for having such processing power is its hunger for random-access memory (RAM). The process is memory-intensive because the computer must hold both the user's and the remote computer's vocabularies simultaneously.

To access Dow Jones, for

To access Dow Jones, for example, Natural Link needs 256K bytes of RAM. Today, not many users have installed that much RAM in their computers, but by 1990 virtually all business ma-

chines will have at least 512K bytes or 1M byte of RAM inside them.

Another key to achieving AI is to make the computer do things the same way a person would. A program called Insearch intercedes with a large and difficult to use data base — Lockheed's Dialog — to help novice or occasional users find what they want quickly.

As Bob Tabke, a founder of Menlo Corp., explains it, "We made Insearch easy to



One key to progress in natural language processing lies in closer and closer approximation of the user's own speech patterns. But the trade-off for having such processing power is its hunger for random-access memory.

use by building on what people aiready knew: They were familiar with the command window idea from using Visi Calc and 1-2-3. So each query looks like a spreadsheet, from the user's point of view.

Similarly, each data base from which the user can choose looks (on the screen) like a card in a card catalog. We don't have to teach that — everybody knows the analogy. In a lot of ways there are analogies between

data bases and books — an overlap of subject matter but with different slants in

Clearly, one of the hallmarks of an artificially intelligent interface is its use of analogies between what the user expects to see and what the computer actually does — drawn from the user's experiences and not from what is technically happening inside the computer. But that takes a lot of storage and computing power. Sam Biglione, president of Interstate Voice Products, points to some of the limitations and trade-offs of voice recognition in particular and AI in general. "As the size of the vocabulary goes up, it restricts the speed of the system's performance — its ability to process new words. You may have to use 'tricks,' like partitioning the dictionary. To catalog parts, you can keep the numerals in a special vocabulary that only comes into the computer when you precede them by saying the words 'part number.'

#### Error rate

Another limitation is the inherent error rate. Approximately 1% or 2% wrong for every 50 or 100 words is common. Higher error rates come with larger vocabularies because of homonyms. Noise also increases the error rate, and that has produced a psychological problem that stands in the way of greater acceptance of voicerecognition systems. Biglione admits that "the microphone has to be kept pretty close to the mouth in most environments because of the noise. It's especially true in offices, and people there just don't want to wear telephone-op-

erator-type headsets."
Still, Biglione and Eichen see voice-recognition systems as consumer products—becoming accepted first as peripheral add-ons to computer systems, in the same way that disk drives and printers are. Later, they will serve to distinguish one product from another. "Not by the color of the box," says Eichen, "but by the special feature of voice recognition."

Are computers becoming smarter? That's the wrong question. The search for AI is ongoing, and these first products have applied some of the research into practical areas. People are building computers that come closer and closer to mimicking human thought processes. It makes no sense to ask if they are growing smarter. We should ask instead: Do we know enough about ourselves to know what we mean by intelligence?

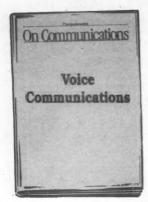
It's like the search for life on other planets. Carl Sagan is fond of saying that when Percival Lowell insisted that the lines he saw on Mars were canals, dug by sentient beings, the presence of inteligent life in the universe was confirmed — at least on his end of the telescope!

#### About the author

Hal Glatzer is the author of five books on computers and communications. Based in Seattle, Wash., he is the Northwest correspondent for Software News and a contributor to several anthologies, magazines and trade journals.



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#### IN DEPTH

In micro-to-mainframe communications, transparency to the user can make the difference between a technical "patch" solution and an end-user solution.

There are trade-offs to be made in each of the following steps:

1. Access mainframe data.

2. Transfer mainframe data to micro environment.

Convert mainframe data into micro format.
 Access data from micro application.

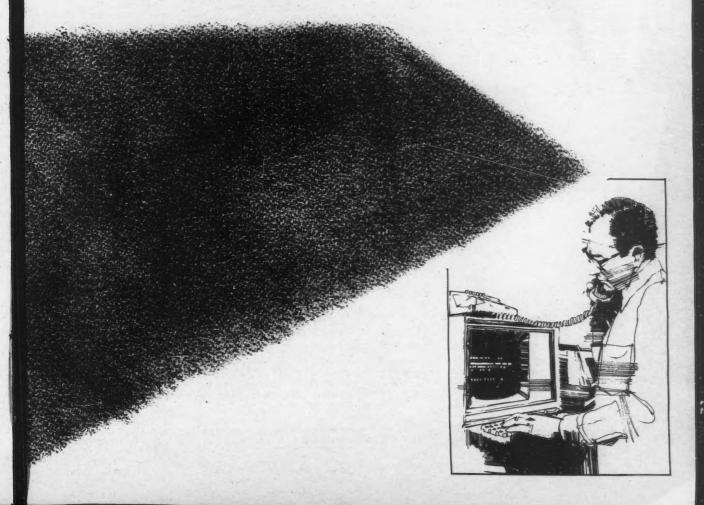
This sequence can be rearranged in a number of ways, depending on where the work is best accomplished. In particular, data conversion from mainframe to micro format can take place on the mainframe, the micro or a combination of the two. Data conversion is the least understood part of the problem and the biggest barrier to easy access of mainframe data.

Anyone who wants to access mainframe data must have a clear understanding of the format in which that data is available. The specific bytes and data formats do not have to be clear, but the means necessary to get to the data must be. These means can range from detailed record formats that describe an old-style binary data file to data dictionary operations and very simple commands of the nonprocedural language used by new-generation report generators. In between lies a whole range of forms by which

#### Making connections in the shadow of the mainframe

By Richard L. Roth

"But the data exists on my mainframe." In this seemingly simple statement lies many of the pitfalls that have blocked effective use of management data since DP shops became a serious part of business.



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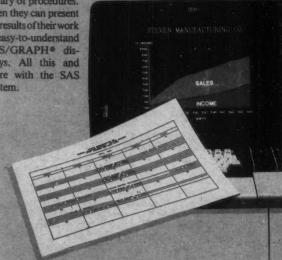
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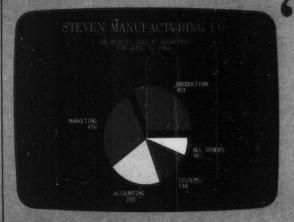
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the data can be accessed.

The simplest form accessible from the micro is printed reports or, in DP terminology, "spooled output files." This form is the machine equivalent of what finally ends up as a printed report.

Generally, such a report is easily accessible to the mainframe user because it is the same form that would normally be sent directly to a printer for printout. It is generated from some already existing application program and report-producing program, and there's no additional work to be done by the DP shop. The work involved is more of a logistical problem: getting the data at a spot where the mainframe user can call it up.

A second form in which the data may exist is an internal format or binary format data file. This kind of file may be directly accessed or acThere are even a number of cases where the same program spreadsheet exists on different computers and the data formats produced by those spreadsheets are not interchangeable.

cessed through an Isam or Vsam access method intended for use by an applications program running on the mainframe proper.

Typically, it is very hard for an end user to get useful access since having another application written that accesses the data in a different form requires allocation of DP or MIS resources that are usually very scarce. The micro user is probably better off finding an existing application that will produce a report or screen display that can be accessed

via the first means just described.

The third form of data that exists on a mainframe is under a sophisticated data management system, such

cated data management system, such as National CSS, Inc.'s Nomad, Cincom Systems, Inc.'s Total or Software AG's Adabas. These systems have report generators and nonprocedural languages that allow a fairly unsophisticated end user to write his own applications and tailor the report output to the form he needs.

In a number of cases, the vendors of these packages have already pro-

vided the means to deal with the conversion of mainframe data into micro format. The data is put directly in a form that the micro application can use. An example is Visicorp's Visi Answer combination to Informatics General Corp.'s system.

While a number of these direct connections are becoming available, it should be made clear that these connections are what the micro users like to call "the grand solution." That is, they're very expensive and require a large commitment on the part of DP or MIS to install such a package. Even though the packages may already exist, the likelihood of availability to the micro user is probably downstream a bit.

#### Boat across river

The second step in the micro-tomainframe link — communications — is the easiest and most readily available. Moving data to the micro from the mainframe is the simplest step in what many vendors would like you to believe is a very simple process.

Communications is the area that has benefited most from improvements in technology because it is basically a hardware-dependent function. A 1,200 bit/sec modem for high-speed communications can be fairly inexpensive. Many computers even come with a built-in 300 bit/sec modem. For a little higher cost, a direct-connect coaxial cable or IBM 3270-like high-speed link is available.

All of these devices allow the micro to emulate a terminal, which the mainframe aiready expects. The lower cost hardware solutions act as asynchronous or dumb terminals. The more expensive hardware units provide some form of bisynchronous connection similar to a 3270 terminal or remote job entry terminal. These can either be directly connected with coaxial cable or by a high-speed bisynchronous modem.

A number of other forms are available that use the variety of local-area networks available for the micro. All of these take advantage of the well-defined communications protocols that exist in the mainframe environment, including Ethernet, IBM's Synchronous Data Link Control or X.25. The necessity for talking between computers has provided a well-documented means for micros to talk to mainframes.

#### Making data usable

The nature of software applications almost guarantees that any form the data takes will not be correct for the applications package on the personal computer that you want to use. This is true even when some supposedly standard format such as device input format or comma delimited is used. There are even a number of cases where the same program spreadsheet, for example, exists on different computers and the data formats produced by those spreadsheets are not interchangeable.

This could occur for a number of reasons that relate either to the implementation of the packages or differences in the precision (number of digits in a number) and the mathematics available on the respective computers. It is usually necessary to massage the data brought from the mainframe and convert it into the form needed by the specific applications neckeds you are using

tions package you are using.
This problem also exists within a

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single machine when switching from one environment to another or upgrading. For example, to take a spreadsheet output and load it into a word processor as part of a report is usually a relatively simple matter because text files tend to be standard formats.

On the other hand, taking a printed table that was typed as part of a printed report and loading it into that self-same spreadsheet is usually relatively difficult. In many cases, the typist ends up retyping the data rather than using the data that is already on the machine.

#### Into the package

One would think that once the data is in the format the applications package requires, loading the data is a fairly simple procedure. Often, this is true. The catch is in the phrase "simple procedure." To follow the simple procedure, you must know the simple procedure.

Not all applications packages have paid much attention to describing the "lesser used" features that are necessary to get foreign data into the applications package. It is often necessary for the software that does the data conversion to explain what one would expect to find in the manual of the

applications package proper. Furthermore, loading data into an application, once it is in the proper form, is a more complex process than simply loading something that has already been massaged by the application.

A good example of this is a spreadsheet that contains sales histories or sales figures for each group of salesmen in a division. Each month, a new report comes off of the mainframe that shows the sales for the month. The report will typically only contain salesmen who actually have made sales, whereas the spreadsheet for historical studies will show all salesmen.

The step of taking the data of only the salesmen who have actually made sales for the month and putting it into the right rows and skipping the rows for salesmen who have no sales activity is a more complex procedure than simply loading in a straightforward report.

#### **Macro facility**

A sophisticated spreadsheet such as Lotus Development Corp.'s 1-2-3 has a macro facility that can be used to accomplish this. In a data base, matching or "join" features can often be used. Once the data is totally and completely available on the personal computer in the right form, the final step of getting it into the applications package in the way that you want it often requires fairly

extensive knowledge of the applications package.

Sometimes it's as simple a task as requesting the load or merge command and then working within the applications package to tailor the column entries to what you want in terms of data formatting and other niceties to make the spreadsheet or the data base come out properly.

There are a number of approaches that mirror the various solutions in the mainframe-to-micro connec-

tion. They can be categorized

- The grand solution.
  The tools approach.
- Programmer for a day. MIS/DP would normally

embrace the grand solution. This solution takes a fourthgeneration data base such as Adabas, Total or Nomad and adds a module that directly allows the personal computer user to download the data in a usable format. Informatics' DB/Answer and Visi Answer are examples of this as provided to users of Informatics data base products.

#### Good solution

In an ultimate sense, these communications complements to the data base systems are a good solution to the mainframe-to-micro connection. It's fairly easy to say — although it's not necessarily true — that eventually all corporate users of personal computers will be dealing with one of these grand solutions.

From DP/MIS's point of view, the grand solution allows the group to pick an answer that will solve everyone's problems. DP can support one primary product provided by a reliable software house, which they can then install as they installed the data bases with the query language and report generators from the same supplier.

As with all grand solutions, the facts are not so simple. In fact, sales of





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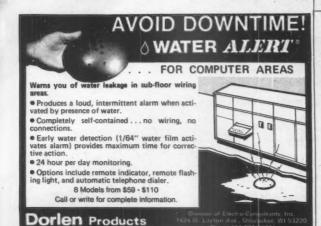
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products such as Visi Answer have been much slower than anticipated for a number of reasons. The primary one is that for a DP shop to commit to a product of such scope-requires a combination of cash resources (most of these packages run in the \$40,000 to \$50,000 range) and political commitment (which, in a large corporation, is often harder to get than the money to pay for the package itself).

Because grand solutions provide direct access into the corporate data base, the problems of data security and data integrity become significant questions that must be resolved before any product can be selected. Furthermore, because each mainframe software supplier provides its own solution, the DP shop has a limited choice. The combination of these factors makes selecting a grand

solution a drawn out process — with political and economic considerations. The many factors involved will stall selection of a package for many installations.

#### Programmer for a day

In any situation where a problem exists and technically capable people are involved, immediate solutions can be found fairly quickly. With minimal support from the applications packages and from the mainframe end, many individual personal computer users and corporate installations have built bridges that allow limited and very customized access to mainframe data for specific personal computer users.

There are a number of common formats that have allowed this to happen. In particular, Software Arts, Inc., the developers of Visi Calc, have defined the data interchange format, which allows a fairly simple program written in any standard language to produce a data file that can be read into a spreadsheet such as Visi Calc. Similarly, Ashton-Tate's Dbase II and Lotus 1-2-3 have provided import facilities that allow reading standard text files that have quotes around fields and commas between numeric items. This format is a common one produced by the language Basic and used to write many homegrown programs.

As with any customized solution, these solve the problem for a very specific case but require both technical expertise and constant customization for different situations.

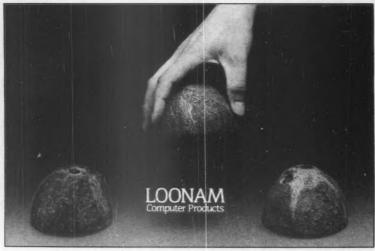
#### Tools approach

One of the most significant factors that first allowed Apple Computer, Inc.'s Apple II and then the IBM Personal Computer to make inroads into a corporate environment is that they are, in a sense, an extended calculator. The individual user has direct and total control over the machine. This control provides a totally different psychological impetus for productivity. This exact factor fights against the mainframe-to-micro user because of the political aspects of reaching mainframe data and, perhaps, corrupting it.

There is, fortunately, a form of the data that comes off the mainframe that most personal computers can access and most mainframes produce. This is the report format (sometimes called the spool file format). It should generally be defined as Ascii text data. The best explanation of this would be a data file on the personal computer that can be typed to the screen and would be completely readable to someone sitting and looking at that screen. There are no special characters in there. It is, in effect, a printed report; it is just not yet printed.

The advantages of a printed report work both ways from the MIS side and the user side. The MIS side does not have a problem of data security and data integrity because, for one thing, there is no way for the personal computer users to send data back to the mainframe. Second, from the security point of view, these reports are already being produced in a form to which specific people have access. So there is no change in the availability of data. In other words, the security question has already been addressed.

From the personal computer side, any personal computer user who has been using communications either to



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their micros or to dumb terminals is already familiar with reports. The user knows how to access them and how to deal with the basic mechanics of running his system to get the re-port in the first place. If that's not true, then the user probably has ac-cess to an individual in his local installation or local office. This kind of dial-up report has been available in most corporate environments for a long time.

In the off chance that the report is not already available to a terminal, the fact that the applications program that produces the report already exists removes the biggest stumbling block for scheduling a custom software product from the MIS department's work load. Therefore, the personal computer user needs to exert a relatively small amount of political effort in order to get access

to the reports.

The catch, of course, is that a report is not a data file from an applications perspective. No applica-tions program available has the ability to filter out all the "trash" that makes a report readable for a person, yet has no meaning in an applica-tions environment. This is particularly significant when you're dealing with a spreadsheet and realize that many of the entries in the spreadsheet are called "labels," which are strictly for visual effect while reading the spreadsheet.

Such things as dotted lines under columns and skipped lines make a real difference in being able to work with a spreadsheet, but they are really not data items in the sense of formulas or numeric columns. These need to be distinguished for the purposes of the spreadsheet's internal

operation. Its basic mechanism for reading in data has the user indicating label vs. numeric for calculation purposes when the data is entered. When data is loaded from a report file, other means are required to make this distinction. A simple re port loaded from a mainframe will have no indication of which is

The tools approach resolves this problem via an incremental solution to each step in this problem:

Step 1 is accomplished via the mainframe sending a report over whatever communications links it has available without requiring new services provided to the user.

Step 2 is provided by whatever communications mode the main-frame has available being matched on the personal computer end with a standard off-the-shelf piece of hard-

ware, whether it be an asynchronous modem or a bisynchronous coaxial 3270 link. Such products can be bought off the shelf, and the communications of the reports or data files

can be moved over fairly simply. Step 3 in the process — convert ing it into the form the applications can use — is accomplished via a data conversion and filtering program, such as Dataviz, Inc.'s One Shot. One Shot allows the user, on the screen, to describe to the program how the data looks based on what he sees on the screen. The user can mark off the part of value and the part of no value and then indicate to the program what output application the data is to be used in. This is captured in a template, which may then be used to process similar reports on successive occasions.

Step 4 in the process is accom plished by a product tailoring its output to the particular application the user is working with and by pointing out to the user exactly what steps are needed to load the data into the right form or into the right part of the application.

The key to this tools approach is that each step in the process is available today, as opposed to the grand solution, which requires a lot of resources and commitments. The tools approach allows the individual personal computer user to solve his current problem immediately and yet in no way blocks the the grand solution. The appropriate large solutions will be forthcoming. The tools approach also fills in the gaps that the grand solution will not touch.

An example of this would be a dedicated query system used by a large company for order placement with all the applications already in place. This system may or may not use a common data base, but the reports and everything are already in a form with which the users are familiar. In this particular situation, the communications method was a proprietary method on a non-IBM mainframe, and Personal Computer interface boards were not available.

Standard printers were tied to these terminals. Therefore, the IBM Personal Computers were plugged into the serial printer ports on the query terminals, and the data was received off the screens by doing screen prints to what the query transactions thought were normal printer screens. The screens were translated using the template facilities in the data conversion program and the resultant data was fed into a standard Lotus spreadsheet

#### Minimize special knowledge

There are a number of nuances to these steps. The most significant aspect is to minimize the amount of special knowledge that the user is required to have to operate the system. Studying how One Shot operates is an example of this approach. The communications methods used are those used in a dial-up situation with which the user is already familiar, thereby minimizing the amount of special effort for the first two steps

One Shot operates visually very much like 1-2-3, which is typical of spreadsheet programs. This requires no learning on the part of the user other than the special commands that One Shot requires. The Help key is in the same place, the edit key is in the same place, and all the cursor operations are the same. The user is



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The catch is that a report is not a data file from an applications perspective. No applications program available has the ability to filter out all of the "trash" that makes a report readable for a person, yet has no meaning in an applications environment.

allowed to proceed with the problem at hand without any special or new knowledge.

special or new knowledge. The further step of having the program automatically decipher as much as it can from the report, before the user gets started in the teach facility, allows the user to expend an absolute minimum amount of effort in pointing out what the user wants to the program.

Once this is done, the user is able to get on with the task at hand and not get wrapped up in the mechanics of some intermediate requirements that must be accomplished.

The template gives an example of this process. Once the report has been described, this template is now saved. Any report of similar form can use the same template. This requires the user to describe the report only once in detail and then reference what report is to be used without getting involved in specifics.

The final step is for the program to minimize the special aspect of the applications package in getting the result of the translated data. So, in loading 1-2-3, a standard load of what is called file load is used to retrieve the data.

Nothing special needs to be done. When the data comes in, it looks as if it had been loaded in from a normal work sheet. Therefore, any disruption or disturbance of the user's thought patterns in proceeding is minimized.

#### Which solution?

The choice of a solution is to some degree determined by the amount of effort involved and the immediacy of the requirement. For those who must make a choice they will be stuck with for a long time, all three solutions are potentials.

The tools solution is best

The tools solution is best for those that need an immediate solution today and have few resources. This solution is the easiest and quickest. Little effort is involved other than to buy the products. It is becoming evident that this solution will be the most practical for some time to come because of the extreme cost of the grand solution.

For those with very special requirements, the programming solution can be used. However, one must consider the cost to programmers and the trap of having to maintain a new program and document and properly support it. The problem may best be solved by coming up with a solution that will address the same issues but will utilize the tools approach.

In terms of selecting the actual tools to be used, there are a number of products coming on the market. The standard elements that define good products should be used in selecting the tools in much the same way you selected your applications

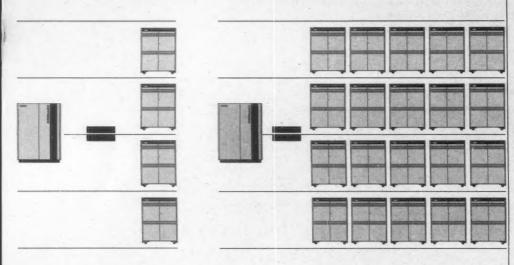
Review the quality of the product and make sure it meets your requirements. Check the quality of the documentation, and make sure that the availability is what the vendors say it is and that the product has a good reputation.

#### About the author

Richard Roth has been involved in data processing since 1968 and has worked with micros since 1975. He is vice-president and a principal of Dataviz, Inc., a Norwalk, Conn., firm that specializes in data bridges and the application of the technology to move data from one environment to another.

Primarily a software designer, Roth wrote the operating system Cdos and was one of the software designers for the Coleco Industries, Inc. Adam.

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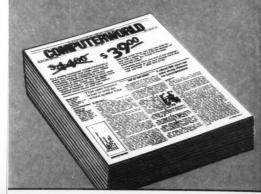
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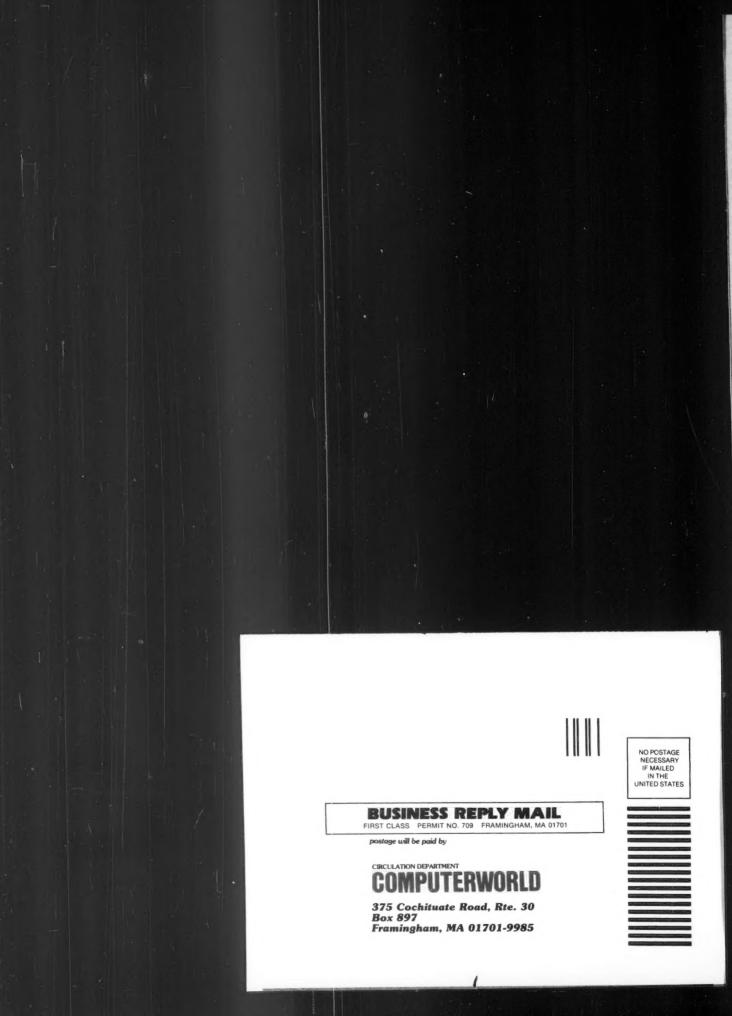
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### **COMMUNICATIONS**

#### Nata mounts campaign for higher Centrex prices

By Phil Hirsch

WASHINGTON, D.C. — A new campaign aimed at increasing the price of Centerex services and eliminating recently added enhancements was announced here last week at the annual convention of the North American Telecommunications Association (Nata).

The association, which represents about 660 independent manufacturers of private branch exchanges (PBX) and related equipment, has been trying for several months to stop the divested Bell operating companies from offering enhanced Centrex services that include functions such as storing and retrieving phone numbers.

The association insists that, under the Federal Communications Commission's (FCC) Second Computer Inquiry decision, these enhancements can be offered by the divested companies only through separate subsidiaries.

#### Cease and desist order

Shortly after the new campaign was announced, Nata asked the FCC to issue a cease and desist order against Mountain Bell Telephone Co. and Northwestern Bell Telephone Co. Both companies allegedly

are offering Centron service — a version of Centrex —directly, on a nontariffed basis

If granted, the order will require the basic portion of Centron service to be tariffed and offered by the two companies directly, and the enhanced portion to be marketed on a nontariffed basis through separate subsidiaries.

Nata also has been unhappy about the pricing of Centrex services, said association President Edwin B. Spievack at a convention press conference. In a number of states, he contended, Centrex monthly line charges have been reduced to compensate for the access surcharge imposed by the FCC.

Later this month, Spievack added, Nata will ask the commission to assert federal jurisdiction over Centrex rates.

#### Halving expected growth

In a speech to the conventioneers, Spievack said that from the beginning of 1983 to the end of 1985, 800,000 new Centrex lines will be put in service, cutting in half the expected five-year growth of PBX sales. Sales of key systems will drop 15%, he added.

These statistics foretell an ominous fu-

ture for the people who built this industry," Spievack added. "The abuse of communications product markets by Centrex—running interactive computer services through telephone company central offices—must be stopped."

#### Importance of services

The importance of these services is indicated by Nata's annual statistical review of the independent telephone equipment interconnect industry.

One conclusion of this review, which was released at the convention, is that although sales in 1983 rose to record levels, "projections . . . indicate a near-term, potentially sharp slowdown. Continued interconnect growth will depend heavily on innovative new offerings . . . and upgrades of the installed base."

of the installed base."
In his prepared address, Spievack lashed out at both the FCC and U.S. District Court Judge Harold Greene, who is presiding over the antitrust settlement signed by AT&T and the Department of Justice in 1982. Both "loudly extol the benefits of competition as they make policies that effectively limit to a few those who can play the competitive game," he said.

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#### Railroads plan fiber-optic net

By Phil Hirsch CW Washington Bureau

WASHINGTON, D. C. — Plans for a nationwide fiber-optic communications network, which reportedly will transmit digital information at bargain basement rates, were announced here last month by Norfolk Southern Corp. and Santa Fe Southern Pacific Corp., two of the nation's major railroads.

Dubbed Fibertrak, the network will primarily be leased to other communications carriers and made available to end users only on a resale basis. By this time next year, Fibertrak is scheduled to be operational among a number of major cities, including Boston, New York, Philadelphia, Washington, D.C., Chicago, Detroit, Cleveland, Atlanta and Jacksonville, Fla. The total system, which is slated to be completed in 1987, will contain about 8,000 miles of cable and serve an area containing more than 80% of the U.S. population.

At a Sept. 27 press conference, Fibertrak President C. Gus Grant said transmission capacity would be leased in 45M bit/ sec increments, each capable of being subdivided initially into 672 voice circuits.

Four separate pricing sets will be offered. The most economical one, Grant said, will reduce the monthly price of a voice-grade circuit to \$3.75 cent/mile. Analog long-distance voice circuits typically are priced at \$9 to \$16/mile/mo, he added.

Grant said that six prospective customers have submitted letters of intent to lease Fibertrak, including Satellite Business Systems and the communications common carrier subsidiaries of Lexitel Corp. and Wang Laboratories, Inc.

Grant also said discussions have been held with Western Union and local telephone companies in a number of cities, aimed at facilitating network access. He said that in each terminating city, Fibertak plans to locate its termination as close as possible to a local carrier's facilities.

#### AT&T to launch 800 service

WASHINGTON, D.C. — AT&T has requested permission from the Federal Communications Commission to offer what is reportedly the first international toll-free telephone service, beginning Nov. 1. Initially, the 800 service will permit users in France to make toll-free international calls to companies in the U.S. The French telecommunications administration is offering a similar service, "Numero Vert International," that offers toll-free dialing from France to the U.S.

The proposed AT&T service would carry a usage charge of \$96/hour for each line—billable in 6-min increments—plus \$36.80/mo for each domestic access line. A minimum of two such lines would be required. Existing domestic 800 service customers also would pay a \$25/line/mo charge for "country access capability," plus a one-time \$108 service-order fee.

AT&T international 800 service was designed to be "a cost-effective way for American business to operate overseas," said Richard K. Jacobsen, AT&T's vice-president for international services. It will give businesses "a presence in foreign nations without having to lease office space

or hire a full-time staff," he said.

In related news, AT&T recently began offering a new "audio/graphics" teleconferencing service said to save customers money by minimizing long-distance charges

Originally announced in August [CW Aug. 13], the Alliance Teleconferencing Service can be used to interconnect 59 locations through any of four data bridges in Chicago, Dallas, Los Angeles and White Plains, N.Y. Telephones, graphics terminals supporting CCITT Group 4 facsimile standards and data terminals — including personal computers — operating at up to 4.8K bit/sec can be attached to the Alliance network, AT&T said.

Alliance service customers pay the applicable standard toll rate for each circuit connecting a terminal to the bridge, plus 25 cents per minute for each bridge port. The savings depend on the number of terminals located in the same state as the bridge and thus on the number of related circuits that can be obtained at intrastate rates, which are generally lower than those for like interstate circuits.

See 800 page 86

#### ACC package boasts system transparency

SANTA BARBARA, Calif. — Advanced Computer Communications (ACC) has announced a software package that is said to provide transparent communications in networks of terminals and Digital Equipment Corp. VAX-11 systems running VMS or AT&T's Unix.

According to a vendor spokesman, the Advanced Computer Communications Exchange System (Acces) Network Virtual Terminal Service (VTS) offers a uniform interface for Ascii terminals that does not change due to the host system operating system or terminal characteristics. Incompatibilities between terminals and hosts are resolved by VTS through a translation to a single network terminal format.

Support for other operating systems is said to be under develop-

With Acces VTS, the spokesman said, network traffic is minimized through intelligent buffering and flow control. The system is said to reduce single-character packets and associated overhead substantially.

Using Acces VTS, network users can access a VAX/VMS host or any Unix hosts using a DEC VT100 terminal without using two different sets of control characters.

Source copies of Acces VTS, written in C, are priced at \$25,000 each. The system's binary license list price is \$1,500. ACC is located at 720 Santa Barbara St., Santa Barbara, Calif. 93101.

#### COMMUNICATIONS

#### CONTROLLERS

#### NCR COMTEN, INC. Comten IPC

NCR Comten, Inc. has announced N., St. Paul, Minn. 55113. integrated protocol converter (IPC) for its Comten 3600 communications processor that enables asynchronous Ascii devices to access Binary Synchronous Communications (BSC) or Systems Network Architecture host applications through conversion to 3270 BSC

The Comten IPC is said to be a modular programmed hardware interface that can be installed in a local or remote Comtem 3600.

The Comtem controller supports from eight to 32 asynchronous lines. Purchase prices range from \$6,100 23 enables users to integrate and confor an eight-line version, to \$15,450 trol computer, voice and private

available for a two-year lease term. Lease prices range from \$296/mo for the eight-line version to \$746/mo for the 32-line version.

NCR Comtem, 2700 Snelling Ave.

#### VOICE/DATA COMMUNICATIONS

#### DIGITAL MICROWAVE CORP.

Digital Microwave Corp. has announced a desktop microwave telecommunications system for linking offices separated by up to 10 miles.

According to the vendor, the DMC

for the 32-line version. It is also branch exchange transmissions in their own local-area network at lower cost than traditional underground cable or older microwave systems.

It is said to use less than 10W of power and to include three basic components — a 15.5-lb modem, an 18- or 27-in. dish antenna and a radio frequency unit about the size of a walkie-talkie.

Digital Microwave, 2363 Calle del Mundo, Santa Clara, Calif. 95054.

#### WANG LABORATORIES, INC. DVX service

Wang Laboratories. Inc. has announced a voice messaging service that will allow businesses in the New England area to rent voice mailboxes Wang's Digital Voice Exchange

The DVX will run through Wang's

**DVX Voice Communication Center** time-sharing service in Burlington, Mass., via Wang's toll-free telephone number or a local Burlington number.

Users can create, send, receive, forward or save voice messages by using a few buttons on a Touch-Tone telephone, the vendor said. The service is available 24 hours a day and can be accessed throughout the U.S., Canada and Puerto Rico.

The preliminary contract for the DVS service is for 90 days, with monthly renewal. Users are charged monthly for each mailbox they re on the following schedule: one to 49 mailboxes, \$35; 50 to 99 mailboxes, \$28; 100 or more mailboxes, \$25.

Wang Laboratories, One Industri-al Ave., Lowell, Mass. 01851.

#### GTE COMMUNICATION SYSTEMS CORP. Voice mail enhancer

Communication Systems Corp. has announced a voice mail system for its Omni series of voice and data private branch exchanges. The voice mail system includes hardware mounted inside Omni system cabinets and features nonsimultaneous exchange of recorded verbal messages and store-and-forward capabilities.

Voice messages are sent or re ceived through use of standard pushbutton, dual-tone, multifrequency telephones. The system reportedly will store up to 38 hours of voice mes sages and will support up to 1,000 users. It also is said to provide voice prompts as user guides for any sequence of five functions: send, receive, reply, redirect and broadcast.

The system reportedly allows nonsubscribers as well as subscribers to leave messages.

A typical basic configuration of four ports and 150 mailboxes costs about \$60,000, while a 1,500-mailbox configuration costs about \$300,000.

GTE Communication Systems, 2500 W. Utopia Road, Phoenix, Ariz. 85027.

#### ZTEL, INC.

Ztel. Inc. has introduced an office automation package for its Private Network Exchange (PNX) and a system control package said to permit control over single- and multisite PNX locations.

It has also announced enhanced networking software for the PNX that reportedly allows a company to integrate the switch into existing private networks.

The office automation package is said to offer an on-line directory for PNX's CRT-based attendant console. It reportedly provides components for least-cost networking, enhanced statistics, enhanced station message detail recording and enhanced data options

Its enhanced networking software provides for tandem calling, leastcost networking, uniform dialing and main/satellite operation, a spokesman said.

Prices for the enhanced networking software range from \$4,000 to \$18,000. Prices for the office automation package range from \$28,000 to \$112,000. Prices for the system control package range from \$9,000 to \$40,000, according to the vendor spokesman.

Ztel, Ballardvale St., Wilmington,

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THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

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#### GO FOR THE BEST, REGARDLESS OF COST EVEN IF IT'S CHEAPER.



There are some people who wouldn't buy a Rolls Royce for a buck-ninety-five if it didn't come with a hood ornament.

Mercifully, there are other people: those who purchase things (like computers) because of logic, rather than insecurity.

For those, we offer this chart showing how the Leading Edge Personal Color FXD Computer differs from the IBM® XT, not a self-serving litany of trivial distinctions, but a straight-up comparison of basic things of righteous concern.

After you read it, bear in mind that any consequent action you take requires only admirable lack of cowardice.

Display	THE LEADING EDGE IM PERSONAL COLOR FXD Full color display standard	THE IBM XT WITH COLOR OPTION Color monitor—\$680. Color controller—\$244.		
Memory	256K Standard	256K Standard		
Speed	7.16 MHz and 4.77 MHz Standard	4.77 MHz Only		
Expandability	Expandable to 640K No additional boards	Expandable to 640K Must add two boards		
Graphics	Capability Standard	With Color Monitor and Color graphic board		
Ports	Both Parallel and Serial Standard	Serial Standard, Parallel optional-\$75.		
Expansion Slots	7 slots Standard of which 3 remain open after expansion to 640K	8 slots Standard of which I remains open after expansion to 640K		
Warranty	One Full Year parts and labor	90 Days parts and labor		
Support	Lifetime no charge toll-free hotline Standard. The best in the industry	None on hardware, software optional at \$50 per call.		
Service	Nationwide Service Centers Nationwide Service Centers Nationwide Service Centers			
Price ·	\$3,995 Complete (Standard 10 MB Hard Disk Configuration)	\$5,459 Configured as 10 MB Hard Disk		

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LEADING EDGE PC AND SYSTEMS DIVISION, 225 TURNPIKE STREET, CANTON, MA 02021. 800-343-6833. (617) 828-8150.

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#### COMMUNICATIONS

#### PROTOCOL CONVERTERS

#### WANG LABORATORIES, INC. Wang Fiber Optic Converter

Wang Laboratories, Inc. has announced a master converter that uses optical fiber cable to transmit data between Wang computers and com-

puter peripherals.

The Wang Fiber Optic Converter (FO-MC) is said to enhance data transmission capabilities and security. The FO-MC converts the Wang serial data link, a dual coaxial copper cable that transmits electronic data sequentially between Wang central processors and peripherals.

The device is offered in two models, each of which is freestanding with its own embedded power sup-ply. Depending on the model selected, the FO-MC can be used with the Wang 7500T series of U.S. government-accredited information process ing systems or the company's commercial office automation systems. The optical link created by the FO-MC can also be used to connect federal security designation Tempeşt-ac-credited systems to non-Tempest systems in a mixed configuration.

The FO-MC-1T Tempest model costs \$750 and the FO-MC-1S commercial model costs \$700. Both are scheduled to be available this month.

Wang Laboratories, One Industri-al Ave., Lowell, Mass. 01851.

#### INNOVATIVE ELECTRONICS. MC 800

Innovative Electronics, Inc. has announced a protocol converter designed to link up to 24 asynchronous Ascii devices to an IBM host comput-er using IBM Systems Network Architecture/Synchronous Data Link Control or bisynchronous protocols.

The MC 800 reportedly appears to the host as an IBM 3274 or 3276 communications controller with IBM 3278/3279 terminals attached.

According to the vendor, it is suited for facilities with numerous remote sites but only one or two terminals per site. The remote terminals, connected via asynchronous mocan effectively share a single

MC 800 at the host site.

It is available in configurations ranging from five to 24 ports and supports 100 types of terminals and transmission rates up to 19.2K bit/

A five-port unit costs \$3,600. Innovative Electronics, 4714 N.W. 165th St., Miami, Fla. 33014.

#### ICOT CORP. Model 361

Icot Corp. has announced a version of its Icot 36X Virtual Terminal System (VTS) protocol converters,

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ad information, Meckler Communications 11 Ferry Lane West Westport, CT 06880 203-226-6967

which are designed to emulate an IBM 3274 control unit in an IBM Sys-

tems Network Architecture network. Model 361 is said to support a variety of asynchronous Ascii terminal devices and personal computers. It reportedly supports direct connect or dial-up access from terminals to the VTS

Model 361 supports eight terminals or printers and one host line and costs \$6,500, according to the vendor spokesman.

Icot, 830 Maude Ave., Mountain View. Calif. 94039.

#### INFOTRON SYSTEMS CORP. VTS 361

protocol converter with an eight-channel gateway to IBM 3270 Systems Network Architecture/Synchronous Data Link Control (SNA/ SDLC) applications was announced

recently by infotron Systems Corp.
The VTS 361 reportedly enables
Ascii terminals, personal computers
and other asynchronous devices to work in a synchronous 3270 SNA/ SDLC network.

According to the company, the system can support one or two host lines, which can be either direct connect or dial-up.

Menu-driven setup, password se-curity, internal diagnostics, automatic speed detection, nonvolatile electrically eraseable programable read-only memory and automatic logon and inactivity disconnect are among protocol features.

Cost of the protocol converter with up to eight channels is \$6,500.

Infotron Systems, Cherry Hill In dustrial Center, Cherry Hill, N.J. 08003.

#### SOFTWARE

#### PERFORMANCE SOFTWARE,

#### Masterlink Version 2

Performance Software, Inc. announced a new version of its Masterlink communications software program that is said to add controlled record selection and update capabilities, Data Interchange Format (DIF) support and transparent data trans-

Masterlink is a program designed to provide file transfer capabilities between an IBM Personal Computer or compatible and an IBM 370, 4300 or 30 series mainframe.

Record selection is provided in a two-tiered approach. The system ad-Continued on page 85

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#### COMMUNICATIONS

#### Continued from page 83

ministrator defines which set of records and data fields a microcomputer has access to, using a combination of begin/end and select/omit rules. The micro user may define which records within that set are needed for an application by specifying a selection criterion, the vendor said.

The DIF support permits mainframe data to be more easily incorporated into microcomputer applications, the vendor said. Transparent data transfers are said to allow microcomputer files to be uploaded or downloaded over Masterlink without concern file formats.

concern for file formats.

Prices range from \$2,500 to \$15,000 for a license to attach any number of personal computers to a mainframe.

Performance Software, 452 Southlake Blvd., Richmond, Va. 23113.

#### DIGITAL COMMUNICATIONS ASSOCIATES, INC. Network Management System

Digital Communications Associates, Inc. (DCA) has introduced for the IBM Personal Computer its Network Management System (NMS), said to be an intelligent monitoring device that permits attachment to a DCA Series/300 network processor.

NMS reportedly allows a network manager to exercise centralized network control. It also is said to evaluate network information, signal the network console operator of problems, provide statistical calculations and accumulate transactions for network accounting.

The NMS software resides in the user's IBM Personal Computer or Personal Computer XT, which serves as the central management site for the entire network. NMS costs \$9,995.

Digital Communications Associates, 303 Technology Park, Norcross, Ga. 30092.

#### MULTIPLEXERS/ MODEMS

#### TELEBYTE TECHNOLOGY, INC. Modem enhancements

The Remark Datacom Division of Telebyte Technology, Inc. has announced enhancements to its Model 71 and Model 72 short-haul modems.

Transmit and receive data LED have been added to simplify installation and diagnostics, the vendor said. The modems also are offered with male or female DB-25-type connectors rather than just male connectors.

The performance of the Model 71 and Model 72 has been upgraded to one mile at 19.2K bit/sec, two miles at 9.6K bit/sec and 10 miles at 1,200 bit/sec, according to the vendor.

The Model 71 costs \$87, and the Model 72 costs \$125.

Model 72 costs \$125. Telebyte Technology, 148 New York Ave., Halesite, N.Y. 11743.

#### CONCORD DATA SYSTEMS, INC. CDS 224 ARQ

Concord Data Systems, Inc. (CDS) has announced a 2,400 bit/sec full-duplex modem with automatic repeat request (ARQ) error correction.

According to the vendor, the CDS 224 ARQ doubles the data throughput of 1,200 bit/sec modems. The modem reportedly provides end-to-end data transmission over ordinary tele-

nhone lines

The modem was designed for asynchronous data transmission applications and operates at 1,200 to 2,400 bit/sec at full duplex. The ARQ recovery feature uses a bit-synchronous protocol to provide end-to-end transmission and full data transparency.

The modem includes an adaptive equalizer that is said to compensate for telephone line interference. It is available in a tabletop or rack-mount version. Tabletop versions are powered by an external power rack. The rack-mount versions can house up to seven modems and use a standard 19-in. Ansi configuration rack.

dard 19-in. Ansi configuration rack.
The standard CDS 224 ARQ is priced at \$1,285 for single units and \$1,395 with an autodial option.

Concord Data Systems, 303 Bear Hill Road, Waltham, Mass. 02154.

#### ANCHOR AUTOMATION, INC. Volksmodem 12

Anchor Automation, Inc. has announced its Volksmodem 12, a 300 and 1,200 bit/sec modem designed with autodial and autoanswer capabilities.

It reportedly uses the same cables as the original Volksmodem, which eases upgrading, and can be used on standard, two-wire dial-up networks. It is capable of full, unattended operation in conjunction with stand-alone terminals and computers with RS-232 interfaces, the vendor said.

It is said to feature AT&T 103/ 212A compatibility; serial command operation; control from any Hayes Microcomputer Products, Inc.-compatible computer program; tone and pulse dialing; dial-tone detect for fast dialing; and busy detection. Scheduled for availability in mid-November, it costs \$299.

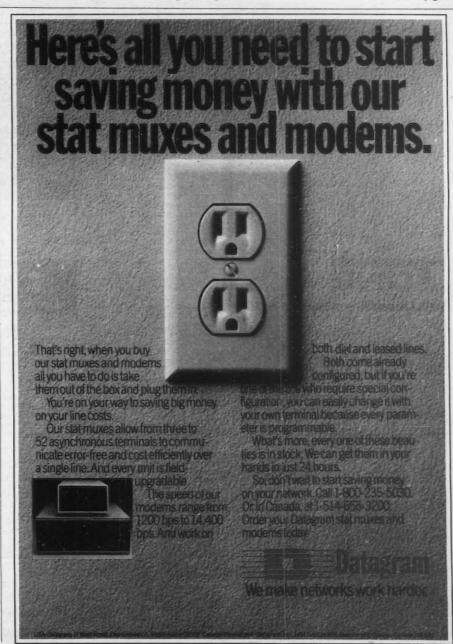
Anchor Automation, 6913 Valjean Ave., Van Nuys, Calif. 91406.

#### TELEBYTE CORP. Accelerator Series 21

Telebyte Corp. has announced a data compression unit that is said to double data throughput using existing modem and multiplexer equipment.

The Accelerator Series 21 Asynchronous Data Compression Unit reportedly allows an asynchronous terminal to double its throughput over asynchronous or synchronous channels. It supports features such as multiple data rates, autodial and autologin and can interface with buffered devices, including statistical

Continued on page 86



#### COMMUNICATIONS

#### ed from page 85

multiplexer ports and error-correcting modems, according to the vendor.

The series includes six products, priced according to speed and features. They range from a 2,400 bit/sec unit costing \$695 to a 9,600 bit/sec unit costing \$1,095, the vendor said.

Telebyte, 215 Oak St., Natick, Mass. 01760.

#### RACAL-MILGO, INC. **Omnimux TDM56**

Racal-Milgo, Inc. has announced a time division multiplexer that is said to reduce synchronous line costs by dividing wideband digital data service circuits into lowspeed channels.

The Omnimux TDM56 supports standard synchronous protocols and operates in either half- or full-duplex modes, according to the ven-

It reportedly can be used to increase channel capacity megabit multiplexers, such as Racal-Milgo's Omnimux T-1, by combining up to eight low-speed channels over a single synchronous channel in the T-1 multiplex-

Data rates from 1,200 bit/ sec to 32K bit/sec can be set for each channel, according to the company.

RS-232C and CCITT V.35

interfaces are standard and reportedly support aggregate link speeds from 9.6K bit/sec to 72K bit/sec.

Scheduled to be available in the first quarter of 1985, the Omnimux TDM56 multiplexer costs \$3,200, according to the spokesman for the vendor.

Racal-Milgo, P.O. Bo 520399, Miami, Fla. 33152.

#### COMTECH DATA CORP. **GB-200, M505 modems**

A groupband modem with up to 72K bit/sec data rates and a broadband modem with 1.4M bit/Hz bandwidth efficiency were announced recently by Comtech Data

The GB-200 groupband modem is said to provide digital transfer over existing microwave CCITT group carrier networks. The product has a built-in multiplexer and demultiplexer that can provide up to three full-duplex data channels with synchronous data rates of 48K, 56K, 64K or 72K bit/sec, the company said. Single-channel operation allows data rates of up to 216K bit/sec.
Applications include digi-

tal data network trunking, private-line data routing and data-over-voice retrofit. The cost of the modem ranges from \$14,000 to \$15,000 for up to three data input ports.

The M505 broadband modem was designed for pointto-point, full-duplex digital transmission over broadband cable systems. The modem's 1.4 bit/Hz bandwidth efficiency reportedly allows for carrier spacings of 0.7 times the data rate.

According to the company, signals can be independently transmitted and received at frequencies ranging from 5 MHz to 400 MHz in 50-KHz increments.

Other modem features include field-changeable data rates, quaternary phase shift keying modulation and 56K bit/sec to 10M bit/sec data rates. Unit price of the mo-dem is \$4.750, according to the vendor.

#### 800 from page 77

To establish an Alliance teleconference without operator assistance, a customer selects the specific type of call - audio only, graphics only or audiographics - and then dials the appropriate 700 number. Alliance 1000 service (0-700-456-1000) identifies audio-only teleconferencing, while Alliance 2000 (0-700-456-2000) identifies graphics-only or audiographics teleconferencing.

Alliance teleconferencing currently is available only in Washington, D.C., and the surrounding area. It will become available elsewhere as soon as local exchanges are equipped to bill for the service, AT&T said.

Comtech Data, 350 N. Hayden Road, Scottsdale, Ariz, 85257.

#### **LOCAL-AREA NETS**

#### M/A-COM LINKABIT, **DMZ32** compatibility

M/A-COM Linkabit, Inc. has announced that its IDX-3000 Digital Network is compatible with the recently announced Digital Equipment Corp. DMZ32 interface for DEC VAX-11 computers.

The network, built around switch and 24-line multiplexer produced by M/A- COM Linkabit, is said to link VAX-11s and peripherals through up to 1,532 nonblocking connections. Up to 24 user lines from the Unibusbased VAX-11s can be con-nected to the net through a T1 trunk using the DEC DMZ 32 interface. The IDX-3000 is said to feature port conten-tion, resource selection, network management controls and option redundancy.

Prices for the net vary according to the number of lines and features. A spokesman said typical prices are \$150/line for 1,000 lines and \$200/line for 200 lines.

M/A-COM Linkabit, 3033 Science Park Road, San Diego, Calif. 92121.

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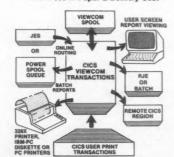


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	CIT101 CIT414A CIT500 CIT600	VideoTerminal Graphics Terminal W.P. Terminal Line Printer	105 134 191 537	58. 74. 106. 298	39. 50 72. 201	L

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### **SYSTEMS & PERIPHERALS**

## TI targets AI markets with Explorer System

AUSTIN, Texas — Texas Instruments, Inc. has announced the Explorer System, a symbolic processing CPU intended for artificial intelligence-based applications. It features the Lisp programming language.

The Explorer System uses Tl's Nubus 32-bit architecture and features a 128M-byte virtual address space and from 2M to 16M bytes of main memory. The Explorer uses 140M-byte Winchester disk drives for on-line mass storage and 60M-byte cartridge tape drives for archival storage. The system can accommodate up to 1,120M bytes of on-line disk storage, the company said.

The system console features a 17-in. display with 1,024- by

The system console features a 17-in. display with 1,024- by 808-pixel resolution, three-button optical mouse and a keyboard. The fiber-optic link connecting the console to the system unit operates at 68M pixel/sec, the company said. The Explorer System is compatible with local-area networks using the Ethernet interface. The system supports Common Lisp with extensions including the MIT Lisp machine system functions.

ing the MIT Lisp machine system functions.

The system is available in six configurations with single-quantity prices ranging from \$52,500 to \$66,500, the company said. Shipments are scheduled to begin in April 1985, the company

More information is available from Texas Instruments, Data Systems Group, P.O. Box 809063, Dallas, Texas 75380.

#### IBM unveils add-ons

Printer, terminal for mid-range units

By John Desmond CW Staff

RYE BROOK, N.Y. — IBM recently unveiled a display station and a printer for its line of mid-range computer systems.

Announced were the 5291 Model 2 Display Station, which re-

Announced were the 5291 Model 2 Display Station, which replaces the IBM Model 1, and the 5262 printer for the 3262 family of steel-hand impact printers.

of steel-band impact printers.

The 5291 Model 2, a member of the 5250 Information Display System, is a smaller, ergonomically enhanced version of the Model 1 that can be used with the System/34, 36 and 38, the company said.

Features of the Model 2 include a screen that can be tilted and rotated, an 83-key low-profile keyboard, 24 command functions and 8- by 9-pixel matrix characters on the display screen. The Model 2 displays up to 1,920 characters in a 24-row by 80-col. format and provides a pedestal-type mount for the display screen.

mat and provides a pedestal-type mount for the display screen. The Model 2 base unit with video unit measures 15%-in. wide by 17-in. high by 15%-in. deep and weighs 35 lb. Extension cables for the video unit and keyboard are available to reduce the desktop area of the machine.

The price of the Model 2 is \$1,850, the company said. The price of extension cables is \$165. The price of the Model 1 has been cut from \$1,975 to \$1,850, IBM said.

See IBM page 90

Honeywell, Inc. will be offering DPS 8 and DPS 88 systems configured with IBM peripherals/90

■ IBM unveils details of experimental voice system/90

Tektronix, Inc. has announced a graphics workstation/90

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Board-Level Devices/92

#### Sequoia user cites 'flawless' hardware, software bugs



FIRST USER

By John Desmond CW Staff

CAMBRIDGE, Mass. — The first user of Sequoia System, Inc.'s large-scale on-line transaction processing system, a commercial software development and software contract research firm here, said it is impressed with the system hardware but has experienced minor problems with Sequoia's AT&T Unix-based operating system.

Donald Eastlake III, manager of computer resources at Computer Corp. of America (CCA) here, said the company obtained a test version of a Sequoia System with two processing modules, two memory modules and two I/O modules five months ago.

Why did CCA choose Sequoia? "We knew some people there and they were looking for a Unix-oriented test site with sophisticated users," Eastlake said.

CCA, whose main product is a data base

CCA, whose main product is a data base management system, concentrates one-third of its business on software contract research. The Sequoia system was employed in the contract work, which had been performed soley by Digital Equipment Corp. VAX-11/780s.

It was not the fault-tolerance or the online transaction processing capabilities of the Sequoia System that attracted CCA. "The main reason we were interested was because it supported Unix, was cost-effective and was easy to expand," Eastlake said

Of the system's performance, Eastlake

said, "The hardware has performed flawlessly; it's really well engineered. I can't say the software has performed flawlessly."

For example, CCA routinely dumps its disk drives to magnetic tape for backup. But the Sequoia software appears to lack an efficient utility for sending data from disk to tape, Eastlake said. Because CCA prefers to wait for delivery of a new version of the software — expected soon — the company has not fully loaded the Sequoia with data so the problem has not been critical. A standard Unix utility is substituting, Eastlake said.

Maximum-stress testing is also being put on hold until the software is updated and more data is put on the system, East-lake said. "I believe they're reaching their promised [level of] performance right now

See FIRST page 92

#### Reconsidering the value of industry-standard compatibility



HARD TALK Tom Henkel CW Senior Editor

ompatibility with industry standards is a feature many hardware vendors will proudly state they offer. Vendors, particularly makers of microcomputers and scientific workstations, will point to a host of off-the-shelf components and systems software in their systems and tell you they are the industry standards.

The thing that lures users to systems based on standardized components and software is the promise of flexibility. Users who buy systems based on off-the-shelf technology, the theory goes, will not be locked into one vendor's product line. If

another vendor announces a more advanced or cheaper version of a standardized product, the user can simply replace his old system with a newer one without forcing the user to make a software conversion. Off-the-shelf components also keep user costs down because vendors can skirt the high research and development costs associated with developing a unique systems architecture or operating system.

operating system.

But is the ability to swap easily an old system for a newer version really an option many users will take? And, in the long run, is the wholesale use of standardized components really good for users?

In some ways, a system that adheres to industry standards gives users a false sense of security. For example, there have been dramatic changes in the so-called standards of the microcomputer industry.

About four years ago, everyone was designing systems based on Zilog, Inc.'s Z80 microprocessor and Digital Research, Inc.'s CP/M operating system. Then IBM came along with its Personal Computer. Suddenly, Intel Corp.'s 8086 microprocessor became the standard, and systems that did not offer compatibility with IBM's PC-DOS or Microsoft Corp.'s MS-DOS operating systems were not held in a bright light. Now Motorola, Inc.'s 68000 line of microprocessors is hot, and AT&T's Unix is the operating system du jour.

ating system du jour.

In many cases, industry standards are not really standards at all

— they are a market trend that will

probably change in a few months

probably change in a few months.

True, a Z80-based system that runs CP/M can use a pile of off-the-shelf software. And there are certainly enough Z80-based systems around to give the user a real choice

of hardware. But can these users easily switch to the current standard, a 68000-based system that runs Unix? They can, but not very easily

Compatibility with industry standards has merits — to a point. But when it comes to migrating to the next generation of systems, the standards seem to fall apart. New generations of computer systems come and go so quickly, the user seldom has the chance to take advantage of all the market flexibility that vendors claim standardization offers.

The fear of being locked in one vendor's hardware and software architecture stems from the mainframe processing community. There, most users are hopelessly tied to a particular vendor's architecture because the task of converting to ansee STANDARD page 92



### UNIX operating systems. An ideal has been

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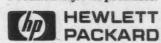


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# SYSTEMS & PERIPHERALS

# IBM scientists at research center announce experimental speech recognition system

YORKTOWN HEIGHTS, N.Y.—
IBM research scientists at the Thomas J. Watson Research Center here
have announced an experimental
system that recognizes spoken English, allowing human voice input to
create letters and memos.

The device is said to recognize sentences composed from a 5,000-word business correspondence vocabulary with greater than 95% accuracy. The system trains itself to recognize a person's voice by listening to the user read a brief text.

According to the vendor, once the system is trained, words, phrases and sentences appear on a workstation screen as the user speaks into a microphone with a pause between words. The text may be edited by voice or keyboard.

### Statistical recognition

The statistical recognition technique is said to function by determing the degree of similarity between the spoken input and the words in the speech recognition system's vocabulary, as well as determining the probability that these words would be in use with the other words in the sentence.

Pronunciation and context are taken into consideration in order that the speech recognition system can distinguish between homonyms such as "to, too and two" based on the surrounding words, according to the vendor.

Words not stored in the vocabulary can be used by spelling the words out, and new words that are going to be used frequently can be added verbally. An IBM spokesman said the objective is to have the system recognize continuous speech without pauses.

IBM declined to comment on whether the speech recognition system would become commercially available.

# Honeywell, IBM sign OEM disk agreement

PHOENIX — By mid-1985, Honeywell, Inc. will be equipping its DPS 8 and DPS 88 mainframes with IBM's 3380 disk drives and 3880 disk controllers.

A spokeswoman said Honeywell signed an OEM agreement with IBM last April but did not publicly announce that the IBM products would be on Honeywell systems until they had been tested. The IBM peripherals are said to operate, without modification, on Honeywell DPS 8 and DPS 98 exercises.

The IBM peripherals will be offered as part of standard Honeywell system configurations.

The spokeswoman added that the IBM agreement will not affect Honeywell's relationship with Magnetic Peripherals, Inc., which has supplied Honeywell with peripherals in the past. Honeywell is part owner of Magnetic Peripherals.

For more information, Honeywell can be reached through Box 8000, Phoenix, Ariz. 85029.

# Tektronix CAD station out

BEAVERTON, Ore. — Tektronix, Inc. has announced the 4991S1 Graphics Input Workstation, said to transform documents such as maps into computer-aided design (CAD) data base files.

The workstation includes the Tektronix 4991 Autovectorizer for automatically scanning and vectorizing hard-copy drawings, Graphics Structure Software for transmitting the structured drawing data to the host for CAD data base storage, an M4115B Computer Display for local graphics structuring and drawing enhancement functions and a 4957 Graphics Tablet to ease user interaction, the company said.

The 4991S1 links to a host CPU via an RS-232C interface, and the Host Interfacing Software runs with IBM's Cadam, Computervision Corp.'s Cadds 4X or Tektronix Plot 10 Computer-Aided Drafting Software.

The price of the 4991S1, to be available in January, is \$150,000.

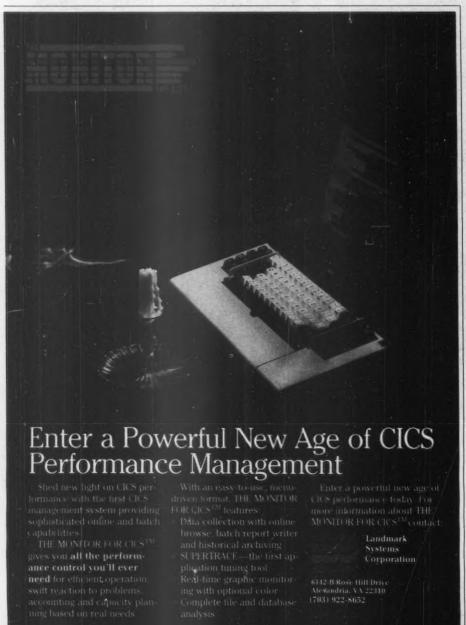
Tektronix can be reached through P.O. Box 500, Beaverton, Ore. 97077.

# IBM from page 87

The 5262 printer emulates the 5256 printer but operates at up to 650 line/min and has a 48-char. set print band, IBM said. The 5262 uses the twin-axial attachment interface to connect the System/34, 36 and 38, as well as the 5294 Remote Control Unit for communicating with a System/36 or 38.

Character sets from 48 characters to a 188-char. multinational set are available. The purchase price for the 5262 is \$13,500, IBM said.

IBM's National Marketing Division is located at 4111 Northside Pkwy., Atlanta, Ga. 30327.



# **SYSTEMS & PERIPHERALS**

### **TERMINALS**

### OLIVETTI CORP. TMI Series 5000 terminals

Olivetti Corp. has announced three programmable point-of-sale (POS) terminals that incorporate Zilog, Inc. 280 8-bit microprocessors and feature compatibility with Corvus Systems, Inc.'s Omninet local-area network. The terminals will be distributed in the U.S. by Transaction Management, Inc. (TMI) of Lexington, Mass.

The TMI Series 5000 runs on Digital Research, Inc.'s CP/M operating system. The 5000 on the Omninet local-area network can transmit up to 1G bit/sec and uses RS-232 interfaces, the company said.

The price for a Model 5100 satellite terminal with Omninet option is \$2,995. The Model 5200 with a floppy disk drive and Omninet option costs \$3,845; the Model 5300, a stand-alone POS CPU with a floppy disk drive but no Omninet option, costs \$3,995, the company said.

costs \$3,995, the company said.

TMI, 271 Lincoln St., Lexington,
Mass. 02173.

### TERM-TRONICS, INC. Miracle 178P terminal

Term-Tronics, Inc. has announced the Miracle 178P terminal with a printer port for linking an Ascii asynchronous printer with an IBM 3178-

compatible terminal.

The 178P features a 12-in. display, a 1,920-char. green phosphor screen, tilt-and-swivel base and an RS-232C interface. The terminal measures 13.7-by 11.5-in. and weighs 25 ib.

The price for the Miracle 178P is \$1,145, the company said.

Term-Tronics, 7408 Trade St., San Diego, Calif. 92121.

# PRINTERS/PLOTTERS

# OUTPUT TECHNOLOGY CORP. Model OT-700 dot matrix printer

Output Technology Corp. has announced the Model OT-700 dot matrix printer, said to print at 700 or 350 char./sec.

The OT-700 weighs 33 lb and measures 5.5-in. high by 26.4-in. wide by 15.7-in. deep, the company said. The printer offers Centronics Data Computer Corp.'s parallel interface and RS-232 serial interface.

The unit offers 136-col. carriage width with adjustable sprocket feed tractors. Dot-addressable graphics printing is available.

The price for the OT-700 is \$1,495. Output Technology, Suite 205, 606 110th Ave., Bellevue, Wash.

# CONCEPT TECHNOLOGIES, INC. Concept Laser 8 printer

Concept Technologies, Inc. has an-

nounced the Concept Laser 8 printer, compatible with the Virtual Device Interface recently incorporated by IBM in its graphics products.

The Laser 8 prints text and graphics at 8 page/min and 300 dot/in. and can run on the IBM Personal Computer XT and the Personal Computer AT via the firm's Concept 100 system, the vendor said.

The printer emulates the Tektronix, Inc. 4014 and Diablo Systems, Inc. 630 daisywheel printer for letter-quality output.

The price for the Laser 8, available in November, is \$7,995.

Concept Technologies, P.O. Box 5277, Portland, Ore. 97208.

### ROLAND DG DXY-880 X-Y pen plotter

Roland DG has announced the DXY-880 eight-pen intelligent X-Y plotter, featuring Hewlett-Packard Co. Graphics Language emulation and based on the Zilog, Inc. 280 microprocessor.

The DXY-880 can plot on 8½-by 11-in. or 11- by 17-in. paper or acetate. Features include a serial RS-232 interface and a parallel Centronics Data Computer Corp. interface, multispeed digitizer, 3K-byte buffer, 24K-byte read-only memory, 4K-byte random-access memory, 200mm/sec speed and a selection of international character fonts, according to Roland DG

The price for the DXY-880 is \$1,295, the company said.

Roland DG, 7200 Dominion Cir-

cle, Los Angeles, Calif. 90040.

# **GRAPHICS SYSTEMS**

### NEW MEDIA GRAPHICS CORP. TS-200 High-Resolution Touch Screen

New Media Graphics Corp. has announced the TS-200 High-Resolution Touch Screen for controlling the Graphover 9500 interactive graphics and video system.

The TS-200 is said to offer resolution of 768 by 484 pixels.

The TS-200 can be mounted on any standard television monitor tied into the Graphover 9500, the company said. The 9500 offers either RS-232C or Centronics Data Computer Corptype parallel interfaces, the company said.

The price of the TS-200 is \$2,250 in single quantities, the vendor said.

New Media Graphics, 279 Cam-

New Media Graphics, 279 Cambridge St., Burlington, Mass. 01803.

### CADLINC, INC. CIM Factory Manager workstation

Cadlinc, Inc. has introduced the Computer-Integrated Manufacturing (CIM) Factory Manager microcomputer workstation for manufacturing companies. The CIM Factory Manager reportedly supports all Cadlinc software. It has a 30M-byte Winchester disk drive and a 5¼-in. floppy disk drive. The system has full AT&T Unix capabilities, including multiwindowing and multitasking functions.

This workstation is a graphics electronic link that completes CIM

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# SYSTEMS & PERIPHERALS

Continued from page 91 Workstation, the CIM network. CIM Factory Manager provides graphics preview, full editing, machine tool control and optimization features, as well as data input for management and administration, according to the vendor.

Price of the CIM Factory Manager is \$85,000 with color graphics and \$65,000 with monotone graphics.

Cadline, 700 Nicholas Blvd., Elk Grove Village, Ill. 60007.

# **POWER SUPPLIES**

ISOREG CORP. Isoguard UPS

Isoreg Corp. has announced the

Isoguard uninterruptible power supply (UPS), said to provide power within plus or minus 2% of correct voltage when the power line voltage deviates by up to 10%.

A sudden 50% load change is eliminated within 25 msec. The Isoguard UPS is said to be capable of tolerating frequency deviations of plus or minus 5% while output frequency remains within 0.25%, Isoreg said.

The product's alarm system sounds an audible alarm when utility power is lost and gives a two-minute warning prior to loss of battery power. Other protective features include input and battery circuit breakers, automatic and manual bypass switches and alarm turn-off.

All Isoguard units feature an internal battery pack with 10 minutes of power. The units are rated from 300 VA to 10 kVA in single phase and are available in 50- and 60-Hz versions.

The price range for a 60-Hz model is \$1,556 to \$19,800.

Isoreg, 410 Great Road, Littleton, Mass. 01460.

# **BOARD-LEVEL DEVICES**

### TELAMON, INC. **Network Engine**

Telamon, Inc. has announced the Network Engine, said to provide asynchronous terminal passthrough and file transfer capability for the Hewlett-Packard Co. HP 3000 series of minicomputers and superminicom-

The Network Engine, firmware

that can be installed on the HP 3000, is said to enable any terminal con-nected to an HP 3000 to dial out and log on to any other system that supports dial-up access without requir-ing a switch or modem for each terminal. The HP 3000 can transfer data to the remote system and process data received, the company said. Telamon provides the HP 3000

software required to operate the Network Engine either interactively or through a batch process, the company said. Each Network Engine is said to support two outgoing lines, and its ports are available for incoming calls when not in use for dialing out

The price of the Network Engine is \$1,400, and the price of the HP 3000 software for the engine is \$2,500.

Telamon, 1615 Broadway, 11th Floor, Oakland, Calif. 94612.

# FIRST from page 87

in terms of efficiency," the manager said. Despite the problems, Eastlake called the beta software "better than usual.

Although the Sequoia is targeted to the transaction processing market, CCA is using the system the same way as the VAX-11/780s are used. "We think it's certainly roughly equivalent" to the DEC machine and has a lower price, at least in CCA's experience as a beta site user, Eastlake said.

'But the modular and fault-tolerant capabilities are enough to tip some people in favor of Sequoia, even if compute power is equal," Eastlake commented. He added that CCA intends to keep its DEC equipment, which suports much of the compa-ny's software. In the future, "we'd be inclined to expand the Sequoia,' Eastlake said.

Would Eastlake recommend the

Sequoia system? "It depends on the user," he said. Sequoia does not release its software source code. The company wrote its own kernel for AT&T Unix System V and University of California at Berkeley 4.2-compatible versions of Unix. For a company like CCA, which has no need to "play with the software," Eastlake said he would recommend Sequoia.

He said of commercial data processing, "It's not ideal for that kind of outfit today, but with additional

software, I think it will be a respectable competitor.

# STANDARD from page 87

other mainframe architecture is so difficult, costly and time-consuming that it can only be considered as a last option. But mainframes are still the most stable group of systems available today. All of the major vendors — IBM, Control Data Corp., Honeywell, Inc., Burroughs Corp., Sperry Corp. and NCR Corp. - have demonstrated long-term commit-ments to their mainframe architectures and, perhaps more importantly, systems software architectures. Some of those commitments date back almost 30 years.

al commitment is not the key reason that leads one to choose a mainframe over a micro. There is a considerable size and cost difference between the two classes of systems that cannot be ignored. But an interesting dichotomy has developed in the markets for micros and mainframes. It appears that vendors of products based on standardized components and software are not as enthusiastic about providing long-term support to those products as are the makers of a unique product line, such as mainare really buying and selling high-tech commodities. They speculate on what will be the hot technology in two years and develop a product based on that technology. If they have guessed accurately, the company will make a great deal of money but only for a short period of time, until the next hot technology takes

Developing systems based on offthe-shelf components clearly has its good and bad points. It has also become a fact of life. The DP executive in charge of buying these systems must realize that he is buying a commodity, not a hedge against obsoles-

# Some observers contend makers of microcomputers, supermicrocomputers and scientific workstations Obviously a long-term architectur-

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printing, and graphics plus PC compatibility. The 855 adds the dual functionality of letter quality print-ers to the 850's impressive list of features. Both are price performance leaders with the same reliability that has made the OMNI 800° series printers the standard in offices around the world.

Texas Instruments 707

The newest edition to the Silent 700 series TI's 707 Portable Data Terminal uses state of the art printing and communications technology to give you all the functions needed to do business in or out of the office.

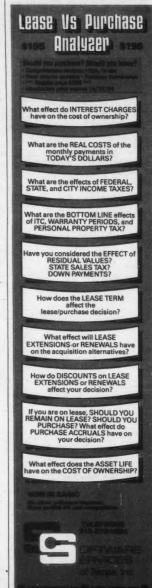
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# IBM compatibility seen key for laptop microcomputers

By Edward Warner

Last month's arrival of the Data General Corp. Data General/One, a lap-size portable computer that runs nearly all IBM Personal Computer software, coupled with reports that other vendors have similar machines in the wings, has entirely changed the complexion of the 16-bit lap-size computer market, according to industry analysts.

The key issue now is total compatibility with the IBM Personal Computer, said Peter Teige, an analyst with Dataquest, Inc. of San Jose, Calif. Machines that meet that mark will "take off" in sales, while those that do not will "have to fit in some other niche of the market," he

George Colony, president of Forrester Research, Inc. of Cambridge, Mass.,

agreed and pegged total shipments of all 16-bit laptop compatibles at 200,000 to 400,000 units in 1985. "That will include [Wang Laboratories, Inc.], DG, IBM and a reworked [Hewlett-Packard Co.] Model 110, he elaborated. Both Wang and IBM will release IBM Personal Computer-compatible laptop models early next year, he predicted. The laptops "must be sold as companions to desktop computers" and will mostly be used by on-the-go executives and salesmen, he said.

By way of contrast, Colony suggested, the total installed base of noncompatible laptop models is not likely to exceed 75,000 to 150,000 units by the end of next year.

That sluggish market is not news to Gavilan Computer Corp., which halted production of its 16-bit laptop unit last See LAPTOP page 102

# Va. firm buys 2,000 DG laptops for field agents

By Edward Warner CW Staff

RICHMOND, Va. - In what may be the largest single purchase so far of Data General Corp.'s new Data General/One portable computer, Life of Virginia insurance company (LOV) has bought 2,000 of the 16-bit lap-size machines for use by field agents

The 9-lb Data General/One computers will be resold at a discount to LOV sales agents, who will use them for fast, custom calculations while working with clients and to communicate with a system of DG minicomputers now being installed at local LOV offices, explained Richard Moschler Jr., vice-president of the insurer's information systems division.

See INSURE page 102

# ■ Sinper Corp. ships TM/1 decision support software/95

### Micro Data Base Systems, Inc. enhances its Knowledgeman integrated package/95

Chorus Data Systems, Inc. offers a product that integrates pictures with data bases/96

# INSIDE

Software/96

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Communications/100

# Flood of service firms complicates software selection

By Paul Korzeniowski CW Staff

NEW YORK - So many companies now offer aids for sorting through the plethora of microcomputer software that companies now need help deciding which such service to use.

William L. Coggshall, president of Software Access International, Inc., a market research firm in Mountain View, Calif., made that observation at the seminar "Aids to Selecting Personal Computer Software" at the Information Management Exposition &Conference (Info '84) held here this month.

Coggshall listed approximately 50 soft-ware directories, 10 on-line data bases and six evaluation services that claim to help a user locate the software package best suited to his needs.

Despite the many services and vast amount of money spent on advertising software packages, users most often rely on word of mouth when selecting a pack age, according to a Software Access survey. Of the business users surveyed, 16% word of mouth was their principal method of locating a needed package. Articles and reviews also led 16% of the respondents to their needed package, the survey reported. Coggshall said store salespeople were no longer a principal source for software leads because only 6% of the respondents cited them as the pri-mary source for leads. "It seems that a lot of people have been burned, so salesmen have lost credibility," Coggshall said. Limitations to each type of service were

also discussed. Directories often contain outdated material, according to Michael Mellin, software publisher at Array, Inc. in Los Angeles

Mellin claimed that ranking packages' effectiveness presents other problems. "When there are 60 IBM Personal Computer word processing packages, how can one differentiate between number 40 and number 60?" Mellin asked.

There are seven sins an on-line data base user can commit, according to Richard Spangler, vice-president at International Computer Program in Indianapolis. "Initially, users should realize that there is a significant cost to these services." Spangler said. "If they only plan to use the service once, it cannot be cost justified.'

See ARRAY page 106

# Broadband net gives IBM micros SNA gateway



he last two installments of this column described IBM's Aug. 14 announcement of PC
Network and its basis: broadband, CATV
technology. This week's column focuses on the Systems Network Architecture (SNA) gateway being provided to link the PC Network to a mainframe

The SNA and 3270-based applications are particularly interesting for large organizations. IBM's announcement stated that the primary supporting software, the IBM PC Network Program and the Network Basic Input Output System (Netbios), would be provided for the PC Network and for the "IBM Cabling System using the token-ring proto col," the "IBM 3270 Personal Computers attached

to selected models of the same IBM 3270 Display Controller" and the "IBM industrial local-area network using the token-bus protocol.'

This means that IBM 3270 Personal Computers will gain a broadband PC Network; a token-ring network; an unspecified, industrial local-area network; and a specialized local-area network

The 3270 issue was directly confronted in IBM's PC Network announcement with the introduction of the IBM PC Network SNA 3270 Emulation Program. This program for the Personal Computer, Personal Computer XT or the Personal Computer AT "provides communications server capability for IBM Personal Computers on the IBM PC Network with IBM System/370 host applications using SNA 3270 emulation," the announcement stated. The program can also be used outside the PC Network on a standalone Personal Computer in order to provide access to IBM System/370 host applications using SNA 3270 emulation, according to the vendor. The program emulates a subset of an IBM 3274 Model 51C controller, a 3278 Model 2 display station, a 3279 Model S2A color display and a 3287 Model 1 print-

See SNA page 103

# Wordstar now \$350: Micropro cuts prices 22% to 60% in series

SAN RAFAEL, Calif. - Micropro International Corp. has cut suggested retail prices for its best-selling Wordstar line of word process-

ing microcomputer software from 22% to 60%.

The price for Wordstar itself has been dropped from \$495 to \$350, while the cost of Wordstar Professional has been reduced from \$695 to \$495, the company said.

The Professional Options Pack has been lowered in price from \$295 to \$195. The cost of Wordstar Professional Plus was cut from \$895 to \$695, while Correctstar's price dropped from \$195 to \$145.

Prices for Mailmerge and Spellstar each have been slashed from \$250 to \$99, and the cost of Starindex has been reduced from \$195

Micropro's Telmerge electronic mail package will remain priced at \$145, the company said.

Micropro International is located at 33 San Pablo Ave., San Rafael, Calif. 94903.

Madron is manager of computer services at North Texas State University, Denton, Texas.

# DEC adds word processor, printer to product line

NEW YORK — Digital Equipment Corp. added its second word processor, the Decmate III, and a letterquality printer, the Model LQP03, to its product line.

DEC said that Decmate III was designed as a complement rather than a renlacement for the Decmate II word "Professionals might select the Decmate II, while clerical staff would use the lower priced, text-intensive Decmate III," said James Gallagher, manager of the vendor's Decmate Group.

Decmate III is bundled with DEC's word processing software, which includes communications, list process ing, sorting and mathemati-

cal features, according to DEC

The machine is said to include a DEC 6120 Cmos microprocessor, 96K bytes of random-access memory, two 5¼-in. 400K-byte disk drives and a serial port for a price of \$2 605

An optional \$395 expansion board, which includes a Zilog, Inc. Z-80 microprocessor, allows a user to run programs written for Digital Re-search. Inc.'s CP/M operating Other options clude Decspell, a 70,000-word spelling checker, and a modem that supports 300 bit/sec and 1.200 bit/sec transmissions

DEC's latest product can communications support with other Decmates. DEC multiuser systems or external data bases such as Dow Jones Information Services' News Retrieval and MCI Communications Corp.'s MCI Mail. DEC said

The LQP03 printer reportedly works at a speed of 25 char./sec in 10-pitch mode and 34 char./sec in 12-pitch

It features a 130-pedal

daisywheel that supports a number of character sets, including prestige, orator, cou-rier, gothic, boldface and sci-

The printer sells for \$1,395 with an optional sheet feeder priced at \$695 and an optional tractor at \$945

DEC is located at 146 Main St., Maynard, Mass. 01754.

# Forte offers emulator. graphics

SAN JOSE, Calif. - Forte-PJ, an emulator package, has been enhanced to allow an IBM Personal Computer AT to communicate with an IBM mainframe computer, according to Forte Data Systems, Inc. Forte-PJ reportedly also allows IBM 3278 or 3279 terminal emulation and permits users to toggle the stand-alone mode and a session with the mainframe.

Forte-PJ permits concur-rent PC-DOS and mainframe sessions to be supported through use of Quarterdeck Office System, Inc.'s Desq windowing package.

The supplier also offers Forte-Graph, an on-line graphics package for the Personal Computer AT. Forte-Graph reportedly converts the micro into a full-function, color graphics worksta-

Forte-PJ is priced at \$1,195. Forte-Graph is priced at \$1,395

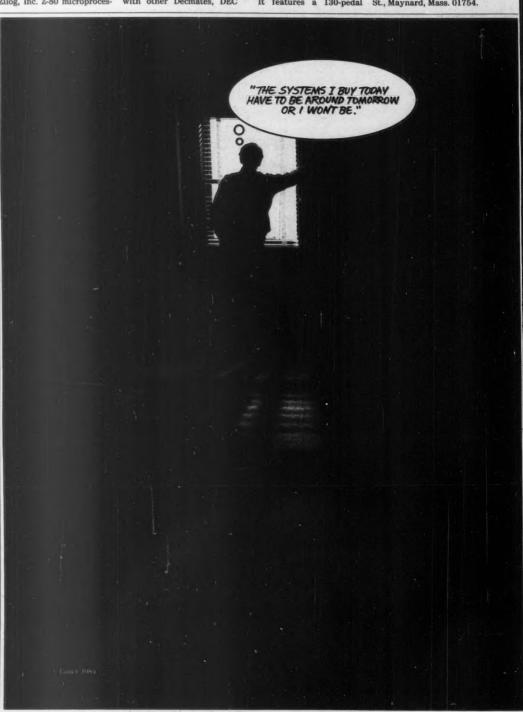
Forte Data Systems is at 2205 Fortune Drive, San Jose, Calif. 95131.

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# Sinper releases decision support package

NEW YORK - Sinper Corp. has shipped Tables Manager/1 (TM/1), a decision support software package that reportedly enables managers to access, manipulate and analyze a tabular data base with user-designed multidimensional table

TM/1, the supplier's first product, runs on the IBM Personal Computer, Personal Computer XT and Compaq Computer Corp. microcomputers. The tables manager is said to have the features of an electronic spreadsheet with integrated graphics and a relational data base manager in a single system, per-mitting custom analysis of a single tabular data base.

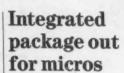
"TM/1 differs from spreadsheets and relational data base managers because it operates from a tabular data base structure geared toward planning and analysis rather than simple record keeping," according to Sinper Chairman Jose Sinai.

Data storage is limited by the capacity of the floppy or

hard disk, but the software employs a virtual memory to provide extra capacity, the company said. Data from mainframe programs reportedly can be downloaded for microcomputer

The price of TM/1 is \$795. Minimum requirements are 192K bytes of internal memory and IBM's PC-DOS 2.0 operating system.

Sinper is located at 14 W. 40th St., New York, N.Y. 10018 and 120 N.E. 9th St., Miami, Fla. 33132.



LAYFAYETTE, Ind. - Micro Data Base Systems, Inc. (MDBS) has enhanced Knowledgeman, an integrated package that runs on the IBM Personal Computer and a number of other microcomnuters.

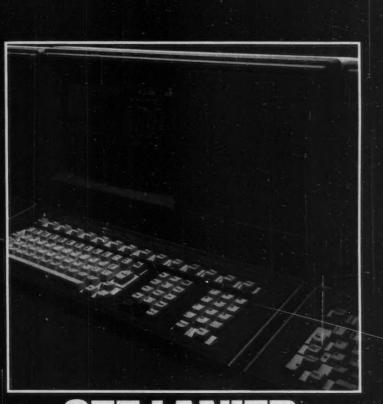
Knowledgeman reportedly integrates a spreadsheet, ad hoc inquiry, statistical anal-ysis, printed forms managescreen management. structured programming lan-guage and a relational data ase manager. Optional modules are said to provide graphics forms painting and text processing capabilities.

The enhancements consist of on-line Help facilities and a language learning feature that enables the product to understand a user's terminology, the vendor said.

In addition to the IBM Personal Computer, the product runs on Texas Instruments, Inc.'s Professional, Wang Wang Laboratories, Inc.'s Professional and Digital Equipment Corp.'s Rainbow microcomwith either Microputers soft's MS-DOS or Digital Research. Inc 's CP/M-86 operating systems.

Knowledgeman is priced at \$500.

MDBS is located at P.O. Box 248, Lafayette, Ind. 47902



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COMPAQ Houston, D

Portable computers (Formerly Gateway Technology)

DATAGO New York, NY Computer stores (New venture of NYNEX)

DAYFLO Costa Mesa, CA Software for IBM PC (Formerly Gilchrist Software)

San Francisco. CA
Computer supplies
[New venture of CrownZellerbach]

INFOCEL
Washington, D.C.
Microcomputer appliances
(Formerly L.C.L. Systems)

MINDSET Sunnyvale, CA Home computers (Formerly RHB Computers)

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# SOFTWARE

ALPHA SOFTWARE CORP.

Data Base Manager II — Integrator
Release 2.0

Alpha Software Corp. has announced enhancement of its Data Base Manager II — The Integrator software for the IBM Personal Computer and Personal Computer XT, Wang Laboratories, Inc.'s Personal Computer and the Texas Instruments, Inc.'s Professional.

The software, Release 2.0, reportedly includes an Alphakey function that permits users to create keyboard macros that reduce to one the number of keystrokes needed to perform a function. Alphakey also allows users to create and store a description of each macro, according to the vendor.

The enhancements are said to include the ability to summarize a data base, even on more than one field. Release 2.0 also provides the ability to create up to 26 customized data input screens, to automatically delete duplicate records and to support color monitors, Alpha said.

Version 2.0 is priced at \$295. Alpha Software, 30 B St., Burlington, Mass. 01803.

# LIVING VIDEOTEXT, INC. Thinktank for Data General/One

Living Videotext, Inc. has announced a version of its Thinktank outlining program for the Data General Corp. Data General/One portable microcomputer.

Thinktank, an outline generator for strategists and planners, reportedly permits the generation of outlines including main topics and subtopics. It is also said to provide users with the ability to expand and collapse portions of the outline and to insert text.

Thinktank on the Data General/ One is said to be menu-driven and to require a minimum of 384K bytes of memory and at least one double-sided quad-density diskette drive. Thinktank is priced at \$195.

Thinktank is priced at \$195. Living Videotext, 2432 Charleston Road, Mountain Vizw, Calif. 94043.

# DATA GENERAL CORP. Overhead Express for Data General/

Data General Corp.'s Desktop division has announced it will offer Business & Professional Software, Inc.'s Overhead Express presentation graphic software for the Data General/One personal computer.

Overhead Express allows users to prepare near-typeset-quality transparencies or foils using a personal computer. Overhead Express is available on a 3½-in. diskette for the Data General/One.

The product reportedly includes 12 fill-in-the-blank templates that follow common business formats, including title pages, budgets, tables and outlines. Templates can also be customized, new templates can be created or pages can be designed directly without the use of a template, the vendor said.

Overhead Express lettering includes five type sizes and four standard typefaces.

The product is available for \$195. Data General Desktop Division, 4400 Computer Drive, Westboro, Mass. 01580.

### APPLIED DIGITAL DATA SYSTEMS, INC. Protege

Applied Digital Data Systems, Inc. (Adds) has announced Protege, a three-utility program that runs on the Adds M1000 workstation.

Protege's terminal emulator package allows the M1000 to be used as a programmed function terminal with the Adds Mentor multiuser system, according to the vendor. A file transfer facility reportedly allows a user to send personal computer files to the M1000 workstation.

A configuration feature allows users to set parameters of the system, the vendor said.

Protege costs \$250

Adds-Systems Division, 100 Marcus Blvd., Hauppauge, N.Y. 11788.

See TOOLS page 97

# Chorus offers Photobase

MERRIMACK, N.H. — A product that merges pictures with a data base system for use in applications from personnel files to real estate listings and product catalogs has been introduced by Chorus Data Systems, Inc. for the IBM Personal Computer and Personal Computer XT.

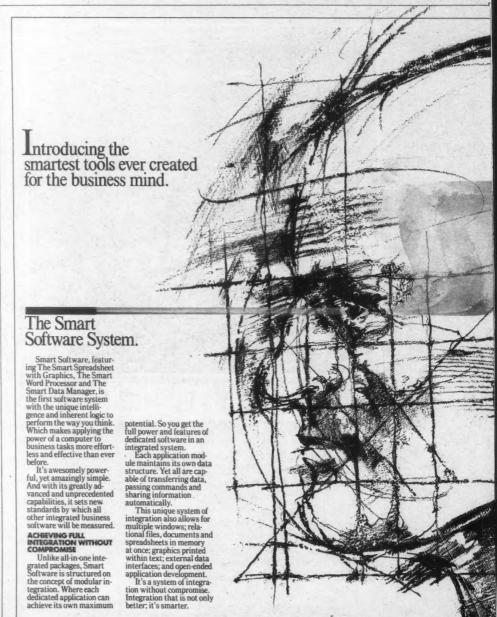
The product, Photobase, is said to be an operating system extension for use with the micro in conjunction with a data base system, such as Ashton-Tate's Dbase II or the IBM Filing Assistant. Images are stored on a video cassette recorder and are captured using the Photobase image manager software and its PC-Eye Video Capture System, a video surveillance camera.

Pictures are said to be stored in black and white with 320- by 200-pixel resolution and 16 levels of gray. Each picture reportedly requires 32K bytes of storage capacity. The Photobase system is said to interact with any data base system for microcomputers that writes to the display using the computer's basic I/O system.

Photobase reportedly requires a high-resolution graphics adapter and composite monochrome monitor.

Photobase, with the PC-Eye Video Capture System, is priced at \$690. The GA-1 graphics display adapter is priced at \$695.

Chorus Data Systems is located at 6 Continental Blvd., P.O. Box 370, Merrimack, N.H. 03054.



# TOOLS from page 96

# PARALLEL COMPUTERS, INC. Officeware

Parallel Computers, Inc. has announced an integrated office automation software program that is an addition to its Parallel 300 computer-system running under AT&T's Unix operating system. Officeware resides on the Parallel 300 and shares processing with the Parallel 300 and up to 32 attached microcomputers, such as IBM's Personal Computer running under IBM's PC-DOS.

The program integrates word processing, spreadsheet, graphics, forms data entry, calendar and electronic mail capabilities. Officeware downloads stand-alone tasks as needed to the microcomputer. It provides win-

dows that allow a user to see and manipulate several pieces of work, the vendor said.

Officeware costs \$1,500 per microcomputer.

Parallel Computers, 3004 Mission St., Santa Cruz, Calif. 95060.

# LATTICE, INC. Dbc Library enhancements

Lattice, Inc. has announced enhancements to its Dbc Library, a software tool kit that reportedly allows programs written in the C language to access Ashton-Tate's Dbase II and Dbase III files running under Microsoft Corp.'s MS-DOS and other operating systems.

The Dbc Library reportedly also can act as an indexed file system. Twenty functions are said to be provided to create, access, update and

extend data bases. It also runs on Digital Research, Inc.'s CP/M and CP/M 86, AT&T's Unix and IBM's PC-DOS operating systems, Lattice said.

Dbc Library can be used to extend existing Dbase applications or to write a complete application, according to the vendor.

ing to the vendor.

Dbc Library is priced at \$250.

Lattice, P.O. Box 3072, Glen Ellyn,
Ill. 60138.

# INDEX TECHNOLOGY CORP. Excelerator

Index Technology Corp. has introduced a version of its Excelerator software design tool for the IBM Personal Computer AT.

Excelerator is said to be an integrated package that allows systems analysts to expedite time-consuming manual tasks, including developing and revising data flow diagrams, structure charts, data model diagrams and other components of the systems specification document.

The product also provides extensive graphics, data dictionary and word processing capabilities, Index Technology said. It reportedly can design enterprise models, screen definitions and report layouts, among other design features.

Excelerator is priced at \$9,000.

Excelerator is priced at \$9,000. Index Technology, Cambridge Center, Cambridge, Mass. 02142.

### SOFLABS Res

Soflabs has introduced its Res program residency manager, software that reportedly allows users to make other programs resident and to reassign keyboard keys to character strings. The package operates on the IBM Personal Computer and Personal Computer XT.

Res is said to allow up to nine programs to be made concurrently resident and up to 56 keyboard keys to be redefined.

Users can configure copies of Res to create program-integrated operating environments automatically for specific applications like word processing, Soflabs said.

Res is priced at \$60 without keyboard key redefinition and \$120 with keyboard key redefinition.

Soflabs, Suite 306, 400 E. Anderson Lane, Austin, Texas 78752.

# FEROX MICROSYSTEMS, INC.

Ferox Microsystems, Inc. has announced a software utility product that allows users to move data from mainframe files into the Lotus Development Corp. 1-2-3 spreadsheet program or the vendor's Encore financial planning software program, running on the IBM Personal Computer and compatible machines.

puter and compatible machines.
Running on the UCSD P-system,
Data Trader reportedly allows the
user to gain access to mainframe data
for work on personal computers. It
also allows data developed on 1-2-3
to be used in Encore, according to
Ferox.

Data Trader sells for \$125. It does not contain communications software.

Ferox Microsystems, 1701 N. Ft. Myer Drive, Arlington, Va. 22209.

### INFOTYM International Fixed Asset Accounting

Infotym, a division of the McDonnell Douglas Information Systems Group, has announced the International Fixed Asset Accounting (Ifaa) package for the IBM Personal Computer and compatibles.

Ifaa is said to provide automated fixed-asset accounting for international businesses. Ifaa reportedly provides calculations for every depreciation method used in the U.S. and includes a depreciation module that can be programmed to meet local requirements. Ifaa also supports either a monthly accounting period or the four-four-five accounting period.

The system automatically produces 12 reports.

Ifaa is scheduled for shipment in November and is priced at \$1,500. Infotym, 20275 Valley Green Drive, Cupertino, Calif. 95014.

See TOOLS page 98



# TOOLS from page 97

# STRATEGIC SOFTWARE PLANNING CORP. **Promis**

Strategic Software Planning Corp. has introduced a Microsoft Corp. MS-DOS version of its Promis project management software for project tracking, planning, resource management and cost control.

The Promis software runs on the IBM Personal Computer XT and reportedly uses a data base architec-

The product is said to be menudriven and to offer report writing capabilities along with interactive data entry and batch entry facilities.

Promis is also said to offer on screen, zoomable presentation graph- the Cobol programmer access to the

ics and multilevel password protection

Promis is priced at \$2,995. Strategic Software Planning, 222 Third St., Cambridge, Mass. 02142.

### MICRO FOCUS, INC. **CO-Graphics**

Micro Focus, Inc. has announced a graphics interface package that enables programmers to generate graphics directly from Cobol pro-grams processed on IBM Personal Computers, Personal Computer XTs and Personal Computer ATs running under IBM's PC-DOS Versions 2.0, 2.1 and 3.0. CO-Graphics is a Graphics Software Systems, Inc. (GSS)-based interface to Micro Focus' high-performance Level II Cobol compilers.

CO-Graphics reportedly provides

GSS graphics routines, which are based on the virtual device interface standard. The programmer can write business graphics applications that produce graphs and charts with data read directly from conventional Cobol data records without programming the hardware-specific systems interfaces, the vendor said.

CO-Graphics will be available in fourth-quarter 1984. The price is \$250 per single license.

Micro Focus, Suite 400, 2465 E. Bayshore Road, Palo Alto, Calif.

### SOFTSTYLE, INC. Printworks

Softstyle, Inc. has announced Printworks, a utility that reportedly allows an IBM Personal Computer to work with 30 types of dot matrix

printers

Printworks' menu selection is said to provide various print modes and characteristics, such as special fonts, custom font editors and lengthwise rotated printing, according to Soft-

Printworks works with printers from Epson America, Inc., Okidata Corp. and C. Itoh Electronics, Inc.

Printworks costs \$69.95. Softstyle, Suite 205, 7192 Kalanianaole Highway, Honolulu, Hawaii 96825.

### LEXISOFT, INC. Spellbinder enhancements

Lexisoft, Inc. has reportedly enhanced Spellbinder, a word process-ing package, to drive Hewlett-Pack-ard Co. Laserjet and Inkjet printers.

Spellbinder reportedly features justification of type, true proportion-al spacing, boldfacing, shadow printing and italics. On the Laserjet, the product supports five on-line proportional fonts, according to Lexisoft.

Spellbinder runs under a number of operating systems, including Mi-crosoft Corp.'s MS-DOS, Digital Research, Inc.'s CP/M 80, CP/M 86, Concurrent CP/M, MP/M, MP/M 86 and Phase One Systems, Inc.'s Oasis.

Spellbinder costs \$495 Lexisoft, Box 1378, Davis, Calif.

### FISCHER-INNIS-SYSTEMS CORP. Watchdog enhancement

Fischer-Innis Systems Corp. has enhanced Watchdog, a software secu-rity package for IBM Personal Computer XTs and ATs.

Watchdog organizes programs and files into directories called areas, which are displayed on an area menu, according to the vendor. Security features display only those files that a user is authorized to use.

This release reportedly features a screen design that places menu selec-tions side by side with a list of function key operations to ease user operation. Another enhancement allows users to encrypt backup files and restore them whenever needed, accord-

ing to the vendor. Watchdog costs \$295.

Fischer-Innis Systems, 4175 Merchantile Ave., Naples, Fla. 33942.

# SYSTEMS

### STAR TECHNOLOGIES, INC. Star PC

Star Technologies, Inc. has introduced a microcomputer that is said to be designed for office automation use and to offer compatibility with the IBM Personal Computer.

The Star PC comes standard with one RS-232 interface and a parallel interface.

The Intel Corp. 8088 microprocessor-based microcomputer is available with up to 256K bytes of random-access memory and Winchester storage in capacities of 11M, 22M or 44M bytes

The price for a unit with 128K bytes of memory, a 12-in. mono-chrome monitor, two floppy disk drives, parallel and serial ports and Microsoft Corp.'s MS-DOS operating system is \$2,600, according to the vendor.

Star Technologies, 5 Studebaker, Irvine, Calif. 92718.



### RECOGNITION EQUIPMENT, INC. Tartan CX; Tartan Personal Computer; Tartan Link

Recognition Equipment, Inc. has announced the Tartan CX data entry system, the Tartan Personal Computer and the Tartan Link software, said to allow the company's personal computer or any IBM Personal Computercompatible micro to operate in several modes.

Each Tartan CX system is said to support 16 devices, including terminals, printers, disks and communications interfaces. The system contains 25M bytes of fixed storage and 25M bytes of removable disk storage. The price the system, including four workstations, a syn-chronous communications inand software, \$29,995, the company said.

The Tartan Personal Computer includes a 16-bit microprocessor with 128K bytes of memory (expandable to 512K bytes), two 51/4-in., 368Kbyte floppy disk drives, two serial I/O ports and a 14-in. monitor. The Tartan micro

with a 128K-byte main memory, a 64K-byte Tartan prosor to interface to the Tartan network and Tartan Link software costs \$4,250, the company said.

Tartan Link software is said to allow IBM Personal Computer compatibles to emulate Tartan terminals. The price of a package to link oth er IBM-compatible personal computers, including the 64K-byte Tartan processor and Tartan Link software, is \$1,750.

All Tartan products use the company's proprietary operating system

Recognition Equipment, P.O. Box 660204, Dallas, Texas 75266.

### SMOKE SIGNAL VAR/68K

Smoke Signal has introduced its line of 32-bit, Unixbased microcomputers, the VAR/68K desktop systems for value-added resellers and end users.

The systems, which reportedly incorporate the Motorola, Inc. 68008 microprocessor, are said to offer flexibility for multiple users who need only acquire a single image of any shared program. Applications and data are reportedly swapped automatically between memory and disk to allow users to run programs that would otherwise exceed available random-access memory.

In its minimum configuration, a VAR/68K system consists of a single terminal with keyboard, 1M byte of flexible disk, 5M bytes of hard disk, eight RS-232 serial ports, a Centronics Data Computer Corp.-type parallel port and the Regulus operating system from Alcyon Corp.

VAR/68K systems priced from \$7,900 to \$25,000.

Smoke Signal, 31336 Via Colinas, Westlake Village, Calif. 91362.

### UNIVERSAL INTERGRAPHIX CORP. 3-D Graphixx Cadd System

Universal Intergraphix Corp. has introduced its 3-D Graphixx Cadd System for the IBM Personal Computer, Personal Computer XT and

Personal Computer AT.
The 3-D Graphixx Cadd System is said to be an interactive, three-dimensional, computer-aided design and drafting (Cadd) product that can image and model techni-cal graphics, production drafting, animation and slide shows.

Other reported functions are color selection per vector, menu operation, two- and three-dimensional editing, functions, graphics word processing and graphics generation with hidden lines removed. Additionally, it is said to offer real-time viewing from any angle and to provide plan, perspective

and multiple views.
The 3-D Graphixx Cadd System software is priced at \$1,995. A complete turnkey system, including Personal Computer AT, mouse, digitizer, plotter and 19-in. monitor, is priced at \$21,950.

Universal Intergraphix, Suite 108, 2990 E. G St., Ontario, Calif. 91764.

# ALPHA MICROSYSTEMS. INC.

Alpha Microsystems, Inc. has announced Entry-Level System (ELS), a one- to threeuser microcomputer report-edly capable of running two operating systems.

ELS uses an Intel Corp. 8088 microprocessor to run Microsoft Corp. MS-DOS operating system programs and provides 256K bytes, ex-pandable to 640K bytes, of random-access memory (RAM) for those applications, Alpha Microsystems

A Motorola, Inc. 68000 microprocessor is used to run the unit's proprietary Amos operating system and supplies 128K bytes of RAM, reportedly expandable to 256K bytes. Files created under one operating system can re-

portedly be transferred to the other operating system.

ELS includes a 10M-byte hard disk, 360K-byte floppy disk drive, monochrome or video monitor controller, keyboard, battery-backed clock and calendar, a serial port and a parallel port.

The price for ELS is

Microsystems, 17332 Von Karman Ave., Irvine, Calif. 92714.

### ESPIRIT COMPLITER PRODUCTS, INC. **DBS 16 enhancement**

Espirit Computer Prod-Inc. has enhanced its DBS 16 multiuser supermicrocomputer to store 105M bytes of data.

The product supports up to 28 users while using network-in-a-box architecture featuring an Intel Corp. 80186 microprocessor, according to Espirit Computer Products. DBS 16 features an 820K-byte floppy disk drive and runs Digital Research, Inc.'s MP/M 86 or Concurrent DOS 3.1 operating systems, the vendor said. The 105Mbyte drive reportedly has an average access time of 30

DBS 16 with 105M bytes

of storage costs \$12,995.

Espirit Computer Products, P.O. Box 425, Welsh Road & Park Drive, Montgomeruville, Pa. 18936.

# REXON BUSINESS MACHINES CORP.

Rexon Business Machines Corp. has announced the RX450 multiuser CPU system based on the Intel Corp. 8086 microprocessor and said to support up to 32 terminals, local or remote, and up to four parallel-interface printers. The system runs Rexon's Recap operating system.

Continued on page 100

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### ed from page 99

The system is said to provide up to 280M bytes of Winchester disk storage, a ¼-in. streaming cartridge tape unit and up to 896K bytes of main memory.

The unit consists of the main system and an expansion unit.

The RX450 comes in two models, both reportedly expandable to a maximum of 32 serial ports and four parallel ports. The price of Model 199-B2, with 256K bytes of main memory, 56M bytes of disk storage, two subordinate processors, two parallel printer ports and eight serial ports, is \$32,150. The price of Model 199-B3, identical to the B2 except for 140M bytes of disk storage, is \$37,590, Rexon said.

Rexon Business Machines, 5800 Uplander Way, Culver City, Calif.

# COMMUNICATIONS

# **Model 4000**

AT&T has announced Model 4000, an intelligent, programmable modem that uses an RS-232C port and works with a number of microcomputers, including the AT&T 6300 and the IBM Personal Computer.
The modem can be operated direct-

from a terminal or a computer, either by entering a few commands or by computer software, AT&T said. A built-in speaker is said to allow the user to monitor dialing and other network activities until a call is an-

Eleven preprogrammed internal settings allow users to customize the modem's settings. Five diagnostic

tests reportedly allow the user to check for correct operation of the modem and completion of data transfer. Model 4000 supports transmission rates of 300 and 1,200 bit/sec.

Model 4000 costs \$499.95. AT&T, 5 Wood Hollow Road, Parsippany, N.J. 07054.

### COMPUTER CONSULTING CENTER, INC. PCLvnx/36, PCLvnx/38

Computer Consulting Center, Inc. announced PCLynx/36 PCLynx/38, command language in-terpreters that run on the IBM Personal Computer and facilitate data transfer between the Personal Computer and interactive applications on IBM System/36 and System/38 pro-

The products allow a user to oper-

ate a Personal Computer for off-line data entry or as an interface to interactive applications, Computer Consulting Center said.

The packages reportedly feature two-way data transfer between a Personal Computer and the larger systems. Standard query, retrieval and inquiry programs extract data from the larger system, and then PCLynx reads the data from the screen and stores it on a Personal Computer diskette, according to the

Each product costs \$695. Computer Consulting Center, 575 Eighth Ave., New York, N.Y. 10018.

# QUALITY SOFTWARE, INC.

Quality Software, Inc. has an-nounced Qscall, an asychronous communications package that runs on an IBM Personal Computer with IBM's PC-DOS 2.0 operating system and 128K bytes of random-access memo-

The product features defined character sets including Ascii, Ebcdic and binary, plus instructions that allow the user to define character sets or modify existing sets, according to the vendor. Qscall can reportedly translate one character set to another character set.

Qscall is said to support transmission rates from 110 to 9,600 bit/sec and X-on and X-off protocols.

Qscall sells for \$150. A demonstration diskette is available for \$35. Quality Software, 60 Lewis St., Newton, Mass. 02158.

# CERMETEK MICROELECTRONICS, INC. Cermetek 1200 PC

Cermetek Microelectronics, Inc. has introduced a modem board for the IBM Personal Computer and Personal Computer XT. The board, the Cermetek 1200 PC modem, reported-ly communicates at 1,200, 300 and 110 bit/sec.

The Cermetek 1200 PC modem is said to be compatible with the Hayes Microcomputer Products, Inc. communications control standard and to work in conjunction with most personal computer communications soft-

The Cermetek 1200 modem is priced at \$495, according to the ven-

Cermetek Microelectronics, 1308 Borregas Ave., Sunnyvale, Calif. 94088.

### SANDFORD COMPUTER SYSTEMS, INC. Videopro

Sandford Computer Systems, Inc. has announced the Videopro software decoder for transforming a microcomputer system running AT&T's Unix into a videotex North American Presentation Level Protocol Syntax terminal.

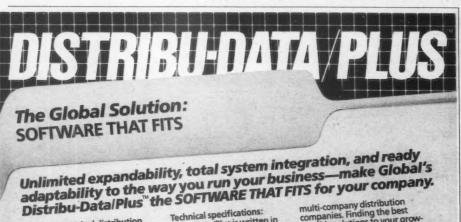
The decoder can be configured to any Unix system on any microcom-puter for any color card, the compa-

Videopro also can be used with any resolution screen, according to Sandford Computer Systems

The price for the Videopro decoder

Sandford Computer Systems, 73 Walker Ave., Toronto, Ont., Canada M4V1G3.

See TALK page 103



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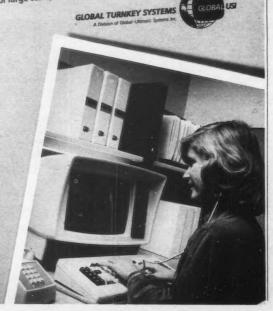
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# LAPTOP from page 93

month, citing lagging sales. [CW, Oct. 1]. Gavilan filed for protection under Chapter 11 of the Federal Bankruptcy Act on Oct. 1.

Gavilan's new president, David Vaughn, blamed the failure of the firm's laptop unit on its late arrival and its lack of IBM compatibility. Vaughn said the only assets of the company that potential buyers are even looking at are its development projects for an IBM-compatible laptop model.

Dataquest's Teige claimed that a recent market slump for laptops occurred because potential buyers were waiting to see what the new IBMcompatibles would be like. Colony predicted that with the arrival of the Data General/One, sales in that arena will improve greatly. "The whole idea of IBM compatibility is going to make the [laptop] portable market," he said.

The vendors of other 16-bit lanton models, though, say their products are selling well, despite the fact that none has the One's level of IBM com-

patibility.

Jules Silverman, manager of systems division marketing support for Sharp Electronics Corp., said the 9-lb PC-5000 is "selling well" and Sharp is "pushing ahead aggressively" in Packard 110, according to Paul Deering, president of Execom, Inc., the Burlington, Mass.-based parent firm.

Deering said the 110s were being bought by businessmen who were attracted to the unit's built-in Lotus

The key issue now is total compatibility with the IBM Personal Computer. Machines that meet that mark will 'take off' in sales, while those that do not will 'have to fit in some other niche of the market.' - Peter Teige, analyst

the lap-size computer market.

Meanwhile, Stacy Allen, manager of applications marketing at Grid Systems Corp., said that the compa-"just closed out our best month in history" from sales of its Compass 16-bit laptop computers. Both Sharp and Grid Systems declined to provide sales statistics, however.

At the retail level, the Boston area Execom Computer Centers are "happy with [their] sales" of the HewlettDevelopment Corp. 1-2-3 package and the unit's ability to communicate with the HP 150 and the IBM Personal Computer, using an optional inter-

The 110, with its 16-line LCD screen, was not likely to be used for much word processing, he added.

Though the DG/One can run most Personal Computer software, the software must be supplied in the One's 31/2-in, diskette format or run

on an optional 514-in. DG diskette drive

Analyst Chris Christiansen of Boston's Yankee Group, however, said there has been a "ground flow of developers" transferring their programs to the One from the Personal Computer's 514-in. diskette format.

Christiansen said the One will meet with success because it is, so far, the laptop that "comes closest" to the functionality of a full-size personal computer. Colony, of Forrester, estimated the One's sales will rise to between 75,000 and 100,000 units next year.

The potential buyer's only prob-lem with the One may be its price, noted Reid Cooper, owner of the Tech Computer Store, Inc. in Cambridge, Mass. The One is priced at \$2.895 for a basic system of 128K bytes and one diskette drive.

Christiansen, though, said buyers are likely to spend from 10% to 15% more than they would for a fully functional desktop computer in order to gain laptop portability. They are unlikely to sacrifice full functionality for price, he added.

# INSURE from page 93

The DG One machines will act as point-of-sale computers for working up product proposals and producing financial plans during the agent's initial visit to the client's office, Moschler elaborated. The company sells annuities and life, health and pension insurance and views the por-table as a means to "close [the sale] in one visit," Moschler said.

Previously, agents would have an initial meeting with a client, return to their offices to calculate proposals and then return to the client's office to make a sales presentation.

The battery-powered One is perfect for making calls on clients be-cause salesmen "don't want to worry about carrying a cord around, Moschler said.

The unit's full-size, 25-line screen also helped sell the insurer on it, as did the machine's compatibility with . nearly all software for the IBM Personal Computer. Moschler said many of the applications that LOV wrote for the Personal Computer will be transferred to the 31/2-in. diskette format of the One.

LOV already uses DG hardware extensively, Moschler said. About 300 DG workstations are in use at its headquarters here, as is the DG CEO data communications network.

When the Ones arrive this month, they will become part of a companywide implementation of DG computers that is also taking place in LOV's local offices, where between 20 and 40 DG MV4000 superminis are being distributed, according to Moschler.



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# TALK from page 100

### HAYES MICROCOMPUTER PRODUCTS, INC. Smartcom II 2.0

Hayes Microcomputer Products, Inc. has announced that Smartcom II 2.0 now runs on the IBM Personal Computer AT and the AT&T 6300 personal computer.

Earlier versions of Smartcom II did not work with either microcomputer. IBM Personal Computer AT and AT&T 6300 users with the incompatible version can receive this version for \$25. House said.

version for \$25, Hayes said.

Smartcom II features verification protocols and an X modem protocol that allows a user to communicate with bulletin board services. The product's batch command set directory stores up to 26 command sequences that allow the user to send and receive files at preset times, according to the vendor.

Smartcom II costs \$149.

Smartcom II costs \$149. Hayes Microcomputer Products, 5923 Peachtree Industrial Blvd., Norcross, Ga. 30092.

# GENERAL MICRO SYSTEMS PC Retrofit

General Micro Systems has announced PC Retrofit, a hardware and software package that lets an IBM Personal Computer or Personal Computer XT function as a Digital Equipment Corp. VT102 or Tektronix, Inc. 4010 terminal.

Continued on page 106

# SNA from page 93

As stated by IBM, the 3270 emulation package, used as a communications server on the PC Network, requires — on the server Personal Computer — 256K bytes of memory, an IBM Personal Computer Synchronous Data Link Control Communications Adapter.

Reportedly, if concurrent PC-DOS and server functions are allowed, the Personal Computer will need at least 320K bytes of memory while a user Personal Computer on the network requires only 256K bytes of memory and a PC Network Adapter. Some or all machines may need a color monitor and color graphics card. PC-DOS 3.1 is the required operating system in the network environment, according to IBM.

Accordingly, the emulation program performs a protocol conversion between PC Network nodes and the SNA network. A Model 51C 3274 communications controller, by IBM, normally supports only eight 3270 devices, but since there can be 32 concurrent sessions on any given PC Adapter, presumably each 3270 server will support up to 32 concurrent uses. The normal 3274 51C operates in half-duplex, usually at 9,600 bit/sec, and is only in a point-topoint circuit with the host front-end processor, which is a 3705, 3725 or equivalent machine. Multidropping half-duplex controllers decrea throughput and, as a result, response time at the user's workstation.

The 3274 is connected to the 3705

23353

with a synchronous version of the RS-232C interface, either directly or through modems, with modems being the norm since the Model 51C is a remote rather than local controller. A typical 3270, SNA network is configured with a star topology modified only by the possible existence of multidropped communications controllers. Access to the mainframe IBM system is through a front-end processor, but the 3270 display stations are connected through 3274 or 3276 controllers. Depending on the model, each controller can handle from eight to 32 display stations. A normal display station is connected to its controller with 93ohm (RG62) coaxial cable. The 3274 or 3276 is normally connected via telephone lines or other twisted-pair cables.

### **Broadband CATV**

Several years ago, the campus system I manage decided to use a broadband CATV system as the primary data communications medium. For research and instruction we maintain a large asynchronous, Sytek, Inc. Localnet 20 local-area network. For business and administrative purposes we run a sizable synchronous network on our standard IBM model. The difference is that the communications between the front-end processor, from NCR Comten, Inc., and the 3274 is via a broadband system rather than over phone lines or twisted-pair cables. All the links on the system use 3M Corp. broadband,

point-to-point modems. Many of the microcomputers (mostly Texas Instruments, Inc. Professional Computers and some Tandy Corp. products) used in the synchronous network are equipped with boards that provide 3278 emulation and are, in turn, connected via an RG62 coaxial cable to a 3274 cluster controller. There are also a few terminals attached to the administrative network through a Sytek Localnet 20.

If we decide to install a PC Network, we will have the curious situation of the personal computers communicating on our existing broadband system at one set of frequencies, tied through the SNA communications server which is another microcomputer, to a 3M point-topoint modem running over the same cable system on another set of frequencies to our Comten front-end

Regardless of IBM's announcement of its Cabling System in May, many who operate large computer and communications systems have already endeavored to find an appropriate single-communications technology that will support all data communications needs. Long before IBM's support of broadband, som had concluded that the CATV technology was best suited to this support. As this illustration suggests, the bandwidth available on a CATV system also allows the ability to do a variety of communications concurrently

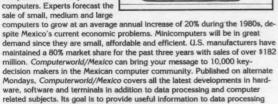
# Computerworld/Mexico talks to computer

HABLAMOS ESPAÑOL

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# MEET THE FAMILY

The 3B2, 3B5, and the AT&T Personal Computer make up the new AT&T family of flexible business computers.

The AT&T 3B2 is one of the most advanced super microcomputers you can

buy today. It packs all the power of a much larger system in a size small enough to sit on your desk top. This UNIX\* System V based multi-user, multi-tasking computer can accommodate up to 18 terminals.

For larger family gatherings, the AT&T 3B5 minicomputers



modate up to 60 users.

graphics capabilities, an adjustable display monitor, and non-glare screen. Its flexibility allows it to operate as a stand-alone unit or as part of an integrated computer network. And its compatibility allows it to run most popular business software, including most available MS-DOS\*\* applications.

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and users more productive. All AT&T Computers are based on our Information Systems Architecture, an open, communications-based structure that can accommo-

UNIX

date and integrate not only our products, but also those of other manufacturers.

Another reason

between terminals, workstations, and computers of all sizes. This local area network allows you to connect departments, buildings, industrial parks, or even campuses. And gives you fast response time and centralized administration and control.

Regardless of the equipment you might own or



AT&T family members work so well together is our unique PC Interface. It bridges the MS-DOS and UNIX Operating Systems, allowing you to use your PC as part of a larger 3B network. Several PC

users can thus share peripherals and files stored on the central 3B2 machine.

Yet another reason AT&T Computers are such a close-knit family is our UNIX System V Operating System, developed by AT&T Bell Laboratories. It's an operating system so flexible, it's rapidly becoming an industry standard. And because UNIX

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ing your needs, AT&T Computers couldn't be more compatible.

AT&T INFORMATION SYSTEMS. WHEN YOU'VE GOT TO BE RIGHT.



# Continued from page 103

The board drives an IBM monochrome or an Amdek Corp. monitor in standard IBM modes and supports options such as 80- or 132-col. screen width, a Hercules Computer Technology graphics card and an IBM graphics card, according to the vendor. PC Retrofit reportedly features an asynchronous port, a printer port and a clock/calendar.

Software to emulate the VT102 provides full screen

and keyboard emulation, local printer support and bidirectional file transfer, according to General Micro.

Tektronix emulation software is optional and is said to allow users to run a number of graphics programs from other systems.

The Retrofit kit sells for \$749 while a board with the Tektronix option costs \$889.

General Micro Systems, Suite 205, 6440 Flying Cloud Drive, Eden Prairie, Minn. 55344.

### GRID SYSTEMS CORP. Mite: Microgate 6530

Grid Systems Corp. has announced Mite and Microgate 6530, two communications packages for Grid's Compass portable computer line

Mite allows a user to access data on any microcomputer running Microsoft Corp.'s MS-DOS or IBM's PC-DOS operating system, Grid said. The software is said to allow users to access data

base services and to support Compass-to-Compass communication.

Microgate 6530 lets a Compass emulate Tandem Computers, Inc. Model 6530 multipage terminal, according to the vendor. Microgate 6530 reportedly allows a Compass to communicate with Tandem mainframes.

dem mainframes. Mite costs \$195, while Microgate 6530 sells for \$595.

Grid Systems, 2535 Garcia Ave., Mountain View, Calif. 94043.

### CBIS, INC. Network-OS

CBIS, Inc. has announced Network-OS, a resource management system for networking Televideo Systems, Inc. or Microsystem International microcomputers.

The product reportedly provides multiuser systems with the ability to share storage and output devices while providing data security. The product reportedly is compatible with Digital Research, Inc.'s language packages and provides 60K bytes of memory.

Network-OS supports standard CP/M calls with extensions, enabling it to emulate Digital Research, Inc.'s MP/M operating system record and file-locking features, CBIS said.

Network-OS costs \$900. CBIS, P.O. Box 14026, Atlanta, Ga. 30324.

# NOVATION, INC. Smart-Cat Plus

A communications system for the Apple Computer, Inc. Macintosh has been introduced by Novation, Inc.

duced by Novation, Inc.

The Smart-Cat Plus system uses a Hayes Microcomputer Products, Inc. protocol and a stand-alone 300 or 1,200 bit/sec modem.

It sells for \$499. Novation, Box 2875, 20409 Prairie St., Chatsworth, Calif. 91311.

# ARRAY from page 93

Timeliness was named as the second sin. "Everyone claims that their data base is up-to-date, but that is simply not true," he added. "There is a significant time between when an update is announced and [when it is available] in the data base."

Poor data base design may yield inconclusive results, according to Spangler. "With some products, a user can enter IBM hardware and get 52 references for only one product," he noted.

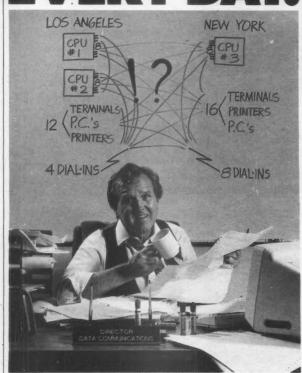
He said data bases often are designed for technicians rather than end users. "Boolean logic and various protocols are too difficult for most people to understand," he said.

Another problem Spangler cited was the financial instability of many on-line vendors. "At least four companies recently went bankrupt," he claimed.

Joseph Segel, chairman of Software Digest in Wynnewood, Pa., noted that most product reviews simply contain the reviewer's opinion. "If a person learns one product, he tends to compare other products with that product. Packages that work in a similar fashion receive high marks, while other products that may be more useful are downgraded."

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When used individually, a TS-600 acts as a port selector and frontend processor, permitting local resource sharing. Connected in pairs, TS-600's become the central point of control in a powerful transparent switching network, concentrating up to 32 devices over a single communications link. ComDesign's modular hardware and firmware plan allows for easy network expansion and access to the latest software developments.

The TS-600 Series multiplexers are designed for ease of use, and are available with integral 4800 or 9600 bps modems. For more information on the new TS Series or for help with any data comm problem, call us. Toll-free (800) 235-6935, or in California (800) 368-8092

# **S**ComDesign

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# CAI's road to growth paved with acquisitions

By Paul Gillin

JERICHO, N.Y. — If you look at the software market as a glant jigsaw puzzle, then Computer Associates International, Inc. (CAI) is methodically dropping the fi-

nal pieces into place.

Computer Associates, which is best known for its extensive offerings in the technical field of systems and utilities software, has been quietly buying and building its way into virtually every major segment of the software industry over the last two years. In the process, revenues have skyrocketed from \$17.9 million in 1980 to an estimated \$140 million in fiscal year 1985.

Computer Associates is becoming a very large company. Now more than 1,000 employees strong, it offers more than 50 products in 14 countries. Its compound annual growth rate for the last five years has been well over 50%.

More impressive, perhaps, is the fact that Computer Associates claims to have the largest mainframe customer base of

any software vendor about 16,000 sites, or more than half the IBM mainframe installations worldwide.

Much of that growth has been through acquisition.

acquisition.

The company began a buy-

ing binge two years ago when it acquired Capex Corp., a firm nearly as large as itself. Since then, the acquisition list has grown steadily. The company bought Information Unlimited Software, Inc. and Stuart P. Orr Associates, Inc. in 1983.

In May 1984, Computer Associates boosted its microcomputer line with the addition of Sorcim Corp. Three weeks later, the company bought Johnson Systems,



CW photo by P. Gil

Inc., a seller of operations management software for data centers. And just last month, Computer Associates acquired Arkay Computers, Inc., makers of a package for IBM DOS-to-MVS conversion.

Despite its position as one of the five largest software companies in the world, Computer Associates keeps a low profile. One reason is that it has come at the "total solution" concept from an unusual angle. Rather than building its reputation as a data base management system (DBMS) or packaged application vendor, Computer Associates established a foothold in the far less glamorous field of systems and utilities software.

While the company today offers DBMS and applications products as well as an extensive line of micro software, its bread and butter is still embodied in products like CA-Jasper/JA, a job accounting and performance evaluation system, and CA-Sort, a dynamic sort facility. Computer Associates still offers more than 25 products in the systems and utilities area.

See CAI page 108

■ A U.S. Customs Service proposal to place tracking bugs on high-tech exports has gained little favor among computer vendors/112

Tandem Computers, Inc. settled an investigation by the Securities and Exchange Commission by agreeing not to commit further violations of securities laws and regulations/116

Storage Technology Corp. last week said it expects to post a \$20 million loss for the third quarter, a result that could place it in technical default on loans issued with requirements for profitability/118

# Meanwhile, back at AT&T...



INDUSTRY INSIGHT

Peter Bartolik CW Senior Editor

hen is AT&T going to drop the other shoe? The telecommunications giant's leap into the computer industry seems, in some respects, to be in free fall.

With an asset base on a parity with IBM and with what should be a leg up as the computer industry increasingly moves toward a communications orientation, AT&T's deregulated entities have been seen in some quarters as the only potential challenger to IBM's dominance.

As discussed in this space last week, AT&T is currently the only combatant in the computer industry with the resources to blunt IBM's increasing dominance of key segments of the industry. With the acquisition of Rolm Corp., IBM will likely be able to address its one great failing — office communications.

Although some industry observers believe it is only a matter of time before AT&T gets its computer act together, others see many nagging questions about the strategies of the companies comprising AT&T Technologies.

# Inconspicuous superminis

While AT&T's personal computer PC6300 is making a splash in the print and television advertising market, the superminicomputers introduced earlier this year seem most inconspicuous.

One industry analyst, who asked not to be identified, said of AT&T's 3B line of products, "Not that many people are really seeing them out there."

Another analyst, Peter Lowber, who follows the superminicomputer industry for the Boston-based Yankee Group, said AT&T's offerings were unimpressive when first announced and could "get blown away" next year when a whole new generation of products from established vendors hits the market. "I have

See AT&T page 121

# **Export revision** dies in Congress

WASHINGTON, D.C. — Congressional efforts to fashion a new version of the Export Administration Act collapsed last week.

The act would have given the Department of Defense added legal authority to review applications for export licenses of computers, telecommunications equipment and other high-technology products.

U.S. House and Senate conferees gave up a six-month-long effort to produce a new system for regulating exports, leaving a situation in which the executive branch must rely on emergency powers to extend the regulatory licensing process in the old law, which expired in December 1983.

The U.S. Commerce Department currently has sole power to review applications for export licenses, and the House version of a new export bill would have extended this authority. However, the Senate version, sponsored by Sen. Jake Garn (D-Utah) granted review authority to the Department of Defense, which has lobied within the Reagan administration for a greater role.

# Silicon Valley associations to monitor toxic cleanup

By Kathleen Sullivan CW West Coast Bureau

PALO ALTO, Calif. — A group of electronics associations recently announced here the creation of the Industry Clean Water Task Force, a coalition designed to coordinate efforts by electronics firms to solve Silicon Valley's groundwater contamination problems.

Groundwater contamination has been an issue here since 1981, when a local electronics firm reported that hazardous materials, which were stored on site, were leaking from their storage containers. Since then, a state regulatory agency has identified 136 contaminated sites in Silicon Valley, the majority of which are linked to electronics firms.

Mounting public concern led to the passage of

local and state laws requiring stiffer controls on the storage of hazardous materials. In addition, the U.S. Environmental Protection Agency recently added 19 Silicon Valley contaminated sites to its Superfund list, which designates particular sites as national priorities for cleanup.

The Industry Clean Water Task Force plans to release a scorecard that will provide information on the status of various cleanup efforts by electronics firms, a spokesman said. The group will issue its first scorecard within 60 days, he said.

The task force will also work to promote an exchange of technical information between electronics companies engaged in the cleanup process and encourage joint cleanup efforts, the spokesman said. He emphasized that the task force will not be involved in the actual cleanup procedures. More

than three dozen companies have agreed to provide the task force with \$100,000 in seed money to launch its initial efforts.

Ted Smith, who heads up the Silicon Valley Toxics Coalition, a grass roots organization that has worked on contamination issues for 2½ years, said that if the group's scorecard provided a detailed look at the cleanup efforts, it could be an effective means of encouraging recalcitrant firms to clean up contaminated sites.

But Smith questioned whether there was any need to encourage the exchange of technical information between companies. "There is no doubt that the contamination cleanup is a technically difficult area," he said. "But the reality is that the companies all rely on the same outside consultants who make technical recommendations."

# CAI from page 107

"We recognize the industry as a software industry and not as data base, micro and applications indussaid Charles B. Wang, Computer Associates' president.

### Founded with four people

Wang has guided the company since it was founded as a four-person U.S. affiliate to European Computer Associates International in 1976. Computer Associates for several years targeted the DOS market, until it became apparent that IBM was pushing MVS as the operating system

of choice for its largest users.

The Capex acquisition in 1982 bought for Computer Associates a company whose product line was strikingly similar to its own, but in the MVS field. Although Computer Associates had offered MVS products for some time, it "just didn't market them successfully," Wang said. "We didn't have a dedicated [MVS] sales force, and we weren't known as an MVS vendor. The fastest way to make a name for ourselves in the market was to buy into it."

By most accounts, the acquisition of Capex has been very successful.

Computer Associates today says it has installed more than 9,100 MVS products. In the last two years, the company has also acquired its way into markets for packaged financial

> 'We recognize the industry as a software industry and not as data base, micro and applications industries.

- Charles Wang, Computer Associates' president.

applications and micros, as well as expanded its traditional systems

base through buyouts.

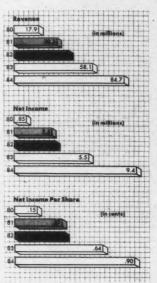
The company's next step is to use that customer base as leverage to sell its newly broadened product line. Unlike many of its competitors, however, Computer Associates will not look to sell a range of products built around a DBMS or a central application. Rather, it offers interfaces to existing products. "We think users have their own preferences," Wang said. "They have a large base of software that we have to work with.

Actually, Computer Associates has little choice but to accommodate existing environments. The company was, in Wang's words, a Johnnycome-lately into the data base market. Its CA-Universe relational DBMS was introduced less than 18 months ago, well after most of its competition was already firmly established.

However, Wang does not consider the late entry to be a handicap. "Realize that about half the DOS installations don't have a data base," he said, "and MVS installations often have two or more.

Wang believes Computer Associates can better penetrate the market by convincing DOS users to go with Universe as their first DBMS, adding a line of applications and productivity aids around it and then helping users to migrate to MVS hen needed.

He further believes that Universe can coexist with other DBMS in large installations, where it will be used in conjunction with the systems and utilities products for new develop-



CAI growth over five years has out-paced the software industry.

# Leasing ensures stability at CAI

JERICHO, N.Y. - Ever since software companies began going public, they have faced increasing pressure from investors to maintain spectacular growth rates. Consequently, outright sales of software rather than fixed-term leasing has become an attractive way to prop up the bottom line.

Computer Associates Interna-tional, Inc. sees the market quite differently. Although Computer Associates offers perpetual leases on all its products, a substantial part of its revenues still come from fixed-term contracts.

'Computer Associates has adopted the strategy of fixed-term licensing over the long term," said Arnold Mazur, senior vice-president of marketing. "There isn't pressure on us to grab all that cash."

Mazur reasoned that if customers are pleased with a product, they will continually renew fixed-term leases and provide a bedrock of recurring revenue for the company. He said Computer Associate's license renewal rate exceeds 90%.

Sales representatives are paid the same commission whether they lease the product perpetually or for a short term, Mazur explained."Once the sale is made, there are no more costs associated with it," he said. "All the commissions are paid, and all the installation and training is done. It's a snowball effect, with more and more licenses

being renewed every year."

The technique has caught the fancy of the investment community. In a research memorandum released in June, the investment banking firm of Alex. Brown & Sons, Inc. es timated the recurring revenues from lease renewals at \$25 million this year. The memorandum said the renewals offered "attractive stability" to the company.

# Firm's training targets employees' hidden skills

JERICHO, N.Y. - David Wardle, and expecting them to stay there, the senior vice-president of sales at Computer Associates International, Inc. ised to be a policeman in Hong Kong. Arnold Mazur, senior vice-president of marketing, was a lawyer before he

Bing Wen, who manages Computer Associates' busy print shop, started in the company mailroom. The regional manager in Los Angeles used to sell condominiums. Throughout the ranks of Computer Associates' sales force are former secretaries teachers, programmers and other people whose background, it would seem, offered little preparation for the jobs they now hold.

Computer Associates prides itself on encouraging that kind of mobility within its organization. Rather than dropping people into specific slots

company offers training and place-ment programs to employees who ant to try something new

Although Computer Associates does not allow such activity to go on unchecked, it does prod employees to discover "hidden potential," accord-ing to Charles Wang, company president. "It's very gratifying to take people who have talent they didn't know they had and get them to real-

Wang is a case in point. A former mathematics major at Queens College in Flushing, N.Y., who still hammers out code on a home IBM Personal Computer XT/370, he has achieved remarkable success in sales and marketing despite his limited back-ground in those areas. Wang scoffs at the notion that a

good manager has to have a master's degree in business administration. "My attitude in dealing with new managers is, 'You know how much experience I have in running a com-pany this size? Zip. You have no expany this size. Zip. You have no ex-perience running a department. Let's learn together, "he said. Noted Mazur, "Our experience is that it doesn't matter whether you're

selling shoes or software. A good salesman is a good salesman.

To encourage mobility into the sales force, Computer Associates offers a six-week sales training course to employees who demonstrate an interest and an aptitude. The course is followed by six weeks of field experi-

Employees who appear interested and promising can then go directly into the sales field.

# Congress passes act to spur joint R&D

By Mitch Betts CW Washington Bureau

WASHINGTON, D.C. - The U.S. Congress earlier this month gave its final approval to legislation that reduces the antitrust liability for research and development joint ven-tures by high-technology firms.

The bipartisan legislation, which President Reagan supported and will sign into law shortly, is expected to encourage the formation of R&D joint ventures by clarifying their status

under antitrust law, sponsors said.
"Through this clarification and through the adjustment of provisions providing for damage relief and at-torneys' fees, the Congress is acknowledging that legitimate coopera-R&D is important technological innovation, important for our economic development and important for our international competitiveness," said Rep. Peter W. Ro-

dino Jr. (D-N.J.).

In the computer industry, which supported the legislation, the most outstanding example of an R&D joint venture is the Microelectronics & Computer Technology Corp. of Austin, Texas, a consortium of 18 firms undertaking research on fifth-generation computer technology

The final legislation, titled the National Cooperative Research Act of 1984, has these major provisions:

■ The courts should not automatically conclude that R&D joint ventures are anticompetitive, but should use a "rule of reason" analysis to weigh the anticompetitive and procompetitive aspects of the venture. For example, the fact that other countries have competing R&D ventures is considered pro-competitive.

If the venture registers with the U.S. Department of Justice and the Federal Trade Commission, then its liability in antitrust litigation is limited to the actual damages, not treble damages, as in other antitrust cases

To discourage unwarranted antitrust suits, attorneys' fees will be awarded to the prevailing party in an antitrust case if the suit is deemed frivolous.

Sponsors of the legislation said it will remove the legal cloud over R&D ventures that had discouraged their formation. Antitrust reform for R&D ventures has been a major provision in several of the proposals - from both Republicans and Democrats for strengthening U.S. industries.

A compromise version of the legislation was approved by the Senate Sept. 26 by voice vote, and the House followed with its approval on Oct. 1 by voice vote.

The House and Senate this summer had approved different versions of

See R&D page 121



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# DIGITAL DISPLAYS THE TERMINALS BEST ENGINEERED FOR BUSINESS

Before you make any investment in business graphics terminals, it really pays to investigate what you'll be using them for.

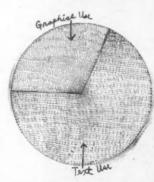
If you're like most businesses, your terminals will be used approximately 70% of the time for generating text and numbers. And only around 30% of the time for strictly graphics purposes. The October 1983 Infosystems article, "How to Buy Graphics Displays," coauthored by Jim Warner, CEO of Precision Visuals, Inc. \* states, "While it may be true that one picture (chart, graph) is worth a thousand words, there will always be the need for words, thousands of words, in the day-to-day activity of the office. Special graphics-only devices can have limited value in a general office environment.'

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That's been true of every terminal we've designed and helps explain their widespread acceptance and popularity.

And you'll find it's equally true of Digital's latest entries, the VT240™ and VT241™ terminals.

As the newest members of Digital's family of terminals. the VT240, a conversational



text and graphics terminal, and the VT241, with the added

dimension of color, continue the tradition of engineering excellence for performance. They offer full VT100™ compatibility to take advantage of a host of offerings already developed. And to meet the needs of the business environment, you'll find a set of standard text features that are either unavailable on other terminals or may have to be purchased at an additional cost.

These features include bidirectional smooth scrolling. split screen, a choice of 80 or 132 columns per line and a double width/double height format. A highly legible 8 by 10 dot matrix character font displays true ascenders and descenders for exceptional crispness and legibility. If certain information needs to be highlighted, you can select from a combination of bold print, blinking and underlining in either normal or reverse video. For your added convenience, there's even a built-in printer port for printing hard copy.

Both the VT240 and VT241 terminals give you the option of erasing selected character positions on the screen for more efficient communications and increased productivity. For those applications that require data to be entered by filling in the blanks of a form, once the data has been accepted by the host, the filled-in information-and only that-can be erased by means of a single command. The form itself remains up on the screen and is ready to accept the next data entry sequence.

range of text capabilities, the VT240 and VT241 clearly answer your graphics needs

The inclusion of a diagram, chart or graph in any report or presentation can immediately transform complex data into easily understandable information.



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Both the VT240 and VT241 terminals generate bit map graphics in a choice of two protocols—Digital's ReGIS™ (Remote Graphics Instruction Set) and Tektronix 4010/4014.™



ReGIS lets you create and store business graphics as simply as producing ASCII text. With VAX-11 DECgraph™ and VAX-11 DECslide™ software, even a novice can prepare graphs and charts and turn them into slides. Self-explanatory icons let you

choose a box, circle, line, polygon, triangle or arc.

The Tektronix 4010/4014 protocol supports the full array of existing 4010 compatible graphics software. Besides, Tektronix Plot 10,™ TELL-A-GRAF™ and DISSPLA™ from ISSCO® and DI-3000,™ GRAF-MAKER™ and GRAFMAS-TER™ from Precision Visuals are also supported.

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# Smuggling detection plan stalled, feasibility questioned

By James Connolly

WASHINGTON, D.C. — Five months after its existence came to light, a U.S. Customs Service plan to plant electronic tracking bugs in computers appears no closer to success, observed officials in the computer industry and U.S. Congress.

Project Rampart is intended to help U.S. officials track electronic equipment that might be smuggled to Soviet bloc countries.

"It's still in the development stage. We are trying to develop a tool which will alert customs inspectors to the presence of sophisticated technological equipment," said customs spokeswoman Christine Frazer of Project Rampart. She said no decision has been reached on what type of device would be used or how it could be monitored.

### Electronic device

"It would be an electronic or mechanical device, and if it was going to be put on equipment at the exporter's or manufacturer's premises, we naturally would need the cooperation of those industries," she added. But spokesmen for several com-

But spokesmen for several computer companies said customs officials have not pressed for that cooperation and have made minimal inquiries — none in recent months — as to the possibility and feasibility of bugging computers.

"The way I understand it, customs really hasn't made any serious inquiry. They've just put out feelers, testing the waters to get people's reaction," said a spokesman for one
computer manufacturer who asked
not to be identified.

### 'Far-out concept

Control Data Corp. Vice-President for Government Programs Hugh Donaghue reported no recent contact from customs and said, "It still seems like a pretty far-out concept. I still question the technical feasibility." Donaghue noted that the concept raises numerous territorial and liability questions. He said an electronic bug that emitted a continuous signal could raise the question of interference with a computer's operation and destroy a user's data.

He questioned who would be liable in such a case and how even the U.S.' allies would be convinced to let customs monitor the bug's transmissions in its ports.

Donaghue suggested that a more cost-effective means of tracking equipment would be placing bar code labels on equipment and shipping crates, allowing inspectors with hand-held bar code readers to know what type of equipment is being

shipped overseas.

An aide to U.S. Rep. William Frenzel (R-Minn.), a member of the House Subcommittee on International Economic Policy and Trade, said the congressman expects Project Rampart to come up for discussion when a general customs regulation bill is aired in January.

"We haven't heard much about it since the authorization hearing last spring.

"The congressman had a briefing on it then, and we've just been waiting to find out where it is going. It does make us nervous. It doesn't seem to have much chance of working," said Pat Eveland, Frenzel's administrative assistant.

# Study covers DP impact on banks

WASHINGTON, D.C. — Computers and communications technology are fostering rapid and dramatic change in the financial services industry, but a period of stability can be expected, according to a recently released congressional report.

The report, "The Effects of Information Technology on Financial Service Systems," was issued by the Office of Technology Assessment, which performs research for congressional committees drafting legislation

Congress has been struggling to rewrite banking laws to reflect the shifting roles of banks in light of competing services being offered by brokerage houses, credit card concerns and the savings and loan industry.

# Main conclusion

The main conclusion of the report was that information processing technology has already caused rapid change, such as making it possible for banks to handle 37 billion checks annually, for credit card companies to process more than 3.5 billion credit card drafts and for brokerage houses to register more than 30 billion securities trades annually.

However, the report noted, "Rapid

However, the report noted, "Rapid and dramatic change in the financial service industry will not persist indefinitely. There will be a period of stabilization, probably over the coming decade."

The major change the report predicted was the offering of new financial services by a wider variety of providers — such as grocery stores and other traditional retail outlets that accept cash payments.

See REPORT page 121

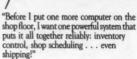
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# Computer competition causes EEC to flex muscles



OUTSIDE LINES

Second of two parts.

The head of the European Economic Community's (EEC) competition commission has identified a problem he shares with virtually everyone: too much work. He has therefore proposed as a priority the enforcement of the EEC's antitrust judgments in local, that is, national courts.

This solution would of course take some of the burden from the European Court of Justice, but it will also increase the importance of national lawyers in EEC antitrust cases. The commission is working overtime to see to it that the regulation is effective sometime in 1985.

Four cases illustrate the fact that more competitive activity will be tolerated and that product pricing will be closely scrutinized.

The EEG told the consumer electronics industry that Saba, a German manufacturer of audio and video equipment, must allow every EEG dealer the opportunity to resell Saba products. To American companies, this sounds like the "availability" issue, so it has not provided a conceptual problem. To the Europeans, how-

ever, its implementation is undergoing considerable analysis.

The second case involves an American company, Apple Computer, Inc. Apple made an agreement with the UK's director general of fair trade that, in effect, allows dealers to resell Apple products at almost any price the dealers choose. "Suggested retail pricing" means now just what it says — suggested. Deviation by dealers is not automatically enforceable by the manufacturer in a court of law. The agreement with the director general was a setback for Apple's aggressive strategy of stopping discounts. As expected, Apple started the controversy when it terminated a dealer under the UK's Resales Prices Act,

which permits termination for socalled "loss-leader" activity. The dealer, however, was able to prove that it was only selling at lower margins.

Braun AG also learned the vicissitudes of discount marketing and distribution. Braun used a dealer for selling below the wholesale purchase price, which in West German constitutes loss leading. The German court and the German Federal Cartel Office were of the same mind on this issue: There is no reason a dealer should be forced to sell a product at the suggested retail price. So long as the sale is competitively priced, loss-leading is not, as a short-term master, inherently anticompetitive. The court also had difficulty believing that Braun's product lost public esteem when sold at a discount.

Finally, in an instance of piercing the corporate veil to look at transfer pricing, the UK's Custom Excise Office impounded a software disk originating from the U.S. parent because of a disagreement over the software's proper valuation. The authorities believed that the proper valuation included software development and programming costs. Eventually, the authorities compromised on the basis of an intracorporate tariff to the specific plant, but the fact that they are questioning intracorporate transfers pricing is troublesome. For national revenue-raising authorities, commercially traded software is tangible, and therefore subject to duty. There is now the emerging European view that intracorporate transfers, that is, noncommercially transferred products, have a higher value that includes heretofore excluded development costs and other overhead costs previously attributed to corporate headquarters.

The EEC, as well as national governments will increasingly have the wherewithal to control their own R&D destiny better. Pricing issues will cause disharmony as local fiscal authorities press for more income and information, which American companies will find necessary to provide about confidential pricing and costs.

The authorities have become sophisticated in understanding the relationships between product costs, distribution/sourcing and transfer pricing. As a result, doing business in the EEC will continue to be one of the most challenging marketing experiences in the world today.

Saunders is a Boston-based attorney with a practice focusing on international marketing, antitrust issues and corporate finance.

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# Alpha Microsystems focuses on OEMs to spur sales

By Peter Bartolik

FRAMINGHAM, Mass. — Alpha Microsystems, Inc., the Irvine, Calif.-based multiuser microcomputer vendor, recently reported a slowdown in orders, owing largely to longer sales cycles experienced by its value-added resellers. But the company decided more than a year ago that its traditional value-added reseller strategy had its limits.

Laurence J. Abzug, head of the company's OEM sales division, in an interview here prior to the company's most recent financial report, explained that the seven-year-old company decided 18 months ago that it could no longer rely solely on its distribution network of some 400 value-added resellers. In March, the company launched an OEM program to sell its well-established, multiuser, multi-tasking systems to larger vendors.

tasking systems to larger vendors.
Claiming an installed base of 20,000 systems, Alpha Microsystems was an early leader in the multiuser marketplace and reported sales of \$26.7 million for the first half of the current fiscal year. But multiuser applications have evolved recently from an industry niche status to a new wave status. In releasing the company's second quarter report Oct. 3, company President and Chief Executive Officer Richard Cortese said he believed anticipation of IBM's Personal Computer AT had a dampening impact on the company's sales, which grew only 3% from the previous quarter.

With IBM directly addressing the multiuser market and other large vendors such as Digital Equipment Corp. setting their sights on the same target, the viability of the smaller pioneer companies is in question. A case in point was the recent decision by multiuser vendor Fortune Systems Corp. to loan \$3.75 million to another multiuser vendor, North Star Computers, Inc. Fortune, which reported revenues of \$20.3 million and a profit for the second quarter after four quarters of losses, considered merging with North Star, but the marriage was called off.

In that type of atmosphere, Abzug said, Alpha Microsystems hopes to build up an OEM business to provide 50% of the company's revenues in four years. "We are positioned so

TY'S THE EARLY BURK WITH A COMPUTER THAT GETS THE WORK

that [a shakeout] is the farthest from our thoughts," he said. Abzug conceded that the company may lose market share in a growing multiuser market but asserted "the pie will get bigger," and the company will continue to grow.

In addition to pursuing vertical market applications, the company also has been negotiating with "one of the largest Japanese integrated systems companies," Abzug said. He would not identify the company but said an announcement should be forthcoming in November or January concerning the Japanese company offering Alpha Microsystems-based products in the U.S. Such an agreement would be a marked change from

the traditional Japanese approach of offering components for use in U.S. vendors' systems.

Although Alpha Microsystems' products use the company's proprietary Amos operating system and also offer a version of AT&T's Unix System V, Abzug said the units are compatible with IBM's Systems Network Architecture and can be expanded from two to 60 users without having to change applications software.

Abzug also said the company believes it can distinguish itself with a line of video-based storage and communications products. He said the company already has 3,000 installations of a backup storage drive using

pulse-code modulation to store data on videocassette tapes using a type of videocassette recorder.

Similarly, the company offers a video-based network with a local-area network that uses coaxial cables and "moves data as if it were a TV signal," Abzug said. He said the network can be accommodated in a CATV system, and signals can be broadcast to satellite links without the need for remodulation.

"There are very obvious advantages that have not been commercially explored," Abzug said, claiming that users can purchase a receive/ broadcast dish antenna for about \$1,500 and set up low-cost, constantstream transmission networks.

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So if you're sending, say, a 12-piece shipment weighing 300 pounds from New York to Los Angeles, it will only cost \$465.00. The same shipment would cost \$748.80 by Emery, Even Burlington Northern would get \$488.25.

# Word of mouth key in selling Perception's voice device

By Peter Bartolik CW Staff

CANTON, Mass.— Riding high after signing a marketing agreement with AT&T, executives of Perception Technology Corp. based here are convinced they can sell MIS managers on the need for a data entry/voice response system.

Selling anything based on voice technology to MIS managers would seem to be an exercise in frustration, but Joseph W. Scally Jr., president of the 60-employee company, said he believes that the MIS professional obtains most of his information on products from peers who have used the products. And Perception Technology has almost 400 installations

at such firms as Miller Brewing Co. and Chase Manhattan Bank.

"The guys running MIS today are very cost-conscious. They are usually operating as a profit center," according to Scally, who joined the 16-yearold company in 1980.

What the company is offering is a communications product with which customers can call in and obtain information such as shipping dates, order status and the like from company mainframes. Salesmen can also use it to call in orders. All this without ever having to deal with a person.

The company's product, the BT-II Data Entry/Voice Response System, is based on Digital Equipment Corp.'s LSI-11 microprocessor and functions as a terminal interface to host computers of most major vendors, including AT&T's 3B series, Scally said. For IBM and compatible equipment, the system emulates a 3270 terminal.

### Sounds like human speech

People calling in hear recorded words and phrases that have been digitized and stored in random-access memory or electrically programmable read-only memory. The company claims that the system emits sounds resembling human speech, as opposed to speech synthesis systems such as DEC's Dectalk product.

Rather than employing humans to sit at terminals and respond to phone requests for information stored in

host computers, the MIS department can set up a B7-II system that tells callers to press their telephone pad keys to generate Ascii code and obtain particular types of information, such as order status or a bank account balance. The system can also prompt callers to punch in a number for connection to an employee.

"How many times do people call that department for the same information, asking, 'Did you ship it?' or 'Where's my order?' "Scally said. "Right now, every MIS manager wants to provide more service... but he can't afford to hire more people to answer phones."

According to Leon Ferber, the company's engineering vice-president, the system can be configured to handle as many as 32 telephone lines, operating as a cluster controller. Operating on a DEC VAX-11, he said, the system would only utilize 1.5% of the host resources.

Scally said he recognizes the general reluctance to adopt voice technology within MIS. DEC's promotion of its Dectalk product has created an awareness of voice products but could also backfire on the fledgling industry. "If all [DEC] does is get people to call [the Dectalk demonstration], it will hurt the industry — that [Dectalk] voice is horrible," he said.

The greatest challenge facing voice products, according to Scally, is that, "We have to make people comfortable with the technology.

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# **COMPUTER INDUSTRY**

# **Tandem consents to SEC check**

CUPERTINO, Calif. — Tandem Computers, Inc. recently consented to a Securities and Exchange Commission (SEC) order requiring the company to undergo annual reviews of its internal accounting controls for a three-year period.

The judgment entered by the SEC with Tandem's consent stems from a two-year unpublicized SEC investigation into the company's December 1982 restatement of revenue and earnings. At that time, Tandem restated its fiscal year 1982 financial statement to lower revenue by 7%, or \$23.8 million, and lower profit by 20%, or \$7.4 million.

A Tandem spokesman said the company neither admitted nor denied SEC allegations, but consented to entry of a federal court judgment in order to avoid the time and financial resources that would be required to litigate

the charges.

The SEC charged that the company's initial financial statement for 1982, issued in November of that year, knowingly overstated revenue. The SEC also charged that Tandem violated securities laws by failing to maintain an adequate system of internal accounting, as required by publicly traded firms. As part of the consent judgment, Tandem is enjoined from further violations of securities laws.

# Suit costs TI \$12 million

DALLAS — Texas Instruments, Inc. announced recently that it will pay \$12 million to settle a class action suit filed by stockholders who claimed that company officers violated federal securities laws.

The suit, filed in September 1983, alleged that the officers made public statements that misrepresented the company's financial prospects for 1983.

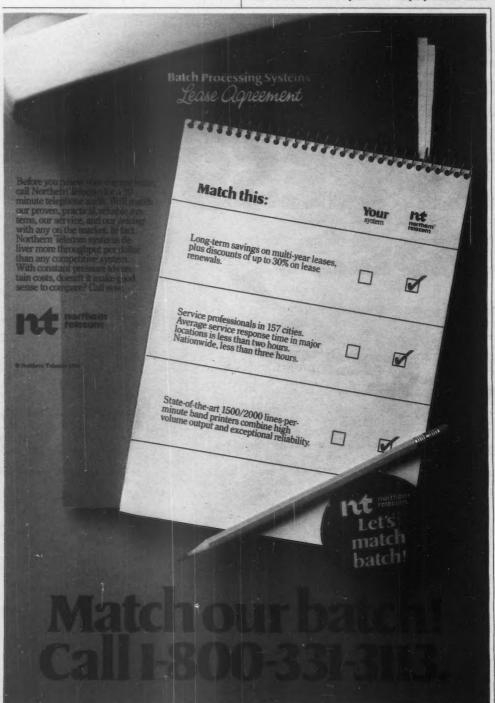
The suit specifically charged that the statements made by the company at its 1983 annual meeting did not reflect the heavy second-quarter losses announced shortly thereafter. TI was rocked by a \$119 million loss in the second quarter, largely due to lagging sales in its home computer division, which was later shut down.

Norman Neureiter, TI vice-president of corporate staff, said four suits containing similar allegations were consolidated under one filed by the Council on Social Work Education, Inc., a New York stockholder. The council could not be reached for comment at press time.

A hearing on the settlement is scheduled for U.S. District Court here in January, Neureiter said. Under the agreement, which is subject to approval by the court, a \$12 million fund would be established to pay eligible claimants.

"TI and the defendants have expressly denied the allegations in the complaint," Neureiter said. "But we have agreed to settle in order to avoid the expense of continuing to litigate and the diversion of management time."

The company said the settlement "will not have a material effect on the earnings or the financial position of the company."



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# U.S. positive trade balance declines 26.5% in 1984

WASHINGTON, D.C. —
The U.S. positive balance of trade in computers and business equipment continued to decline through the first half of the year, according to an analysis conducted by the Computer and Business Equipment Manufacturers Association (Cbema).

The positive balance of trade, an amount by which

U.S. exports exceeded imports, dropped to \$2.2 billion in the first six months of 1984.

This decline represents a 26.5% decrease from the \$2.9 billion positive balance achieved during the same period in 1983.

Cbema's analysis of data provided by the Bureau of the Census projected that total 1984 exports will value \$15,304 billion and imports will value \$10,806 billion, resulting in a net balance of trade of \$4,498 billion for

### DP imports up 91.7%

U.S. exports of data processing equipment and parts in the first half of 1984 rose by 25.2% over the same period in 1983 to a value of \$6.5 billion. However, imports of that type of equipment increased 91.7% over the same period.

Chema reported that the U.S. maintained a positive balance of trade with all major world areas except for the Far East.

A U.S. negative balance of trade with Japan increased

by 99.8% to \$2.03 billion. In addition, a negative balance of trade with Taiwan increased by 254.9% to \$225.5 million.

U.S. imports of data processing equipment and parts from Japan reached \$1.545 billion in the first half of the year, representing a 97.9% increase over the year-earlier period.

# Expecting loss, STC fires 1,500

### By David Olmos CW Staff

LOUISVILLE, Colo. — In a financial setback that may jeopardize Storage Technology Corp.'s (STC) loan agreements with its banks, the company said last week that it expects to report a loss of more than \$20 million for the third quarter.

The manufacturer of storage devices also announced it is firing 1,500 nonproduction employees — about 10% of its work force — suspending work on several projects and cutting officers' salaries by 10%.

The company said it is attempting to negotiate new agreements with its banks, which could conceivably call in the loans and force the company into bankruptcy.

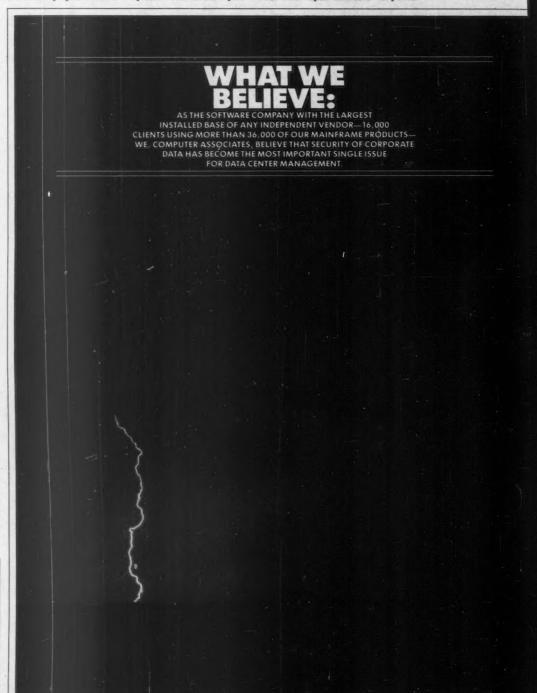
Storage Technology and other companies have been hard hit by price competition from IBM in the market for disk drives for IBM mainframe computers. Minneapolis-based Control Data Corp. announced last month that it was exiting the disk drive market.

Storage Technology last month cut the price of its 8380 disk drive by 10% to \$335,695 to compete with IBM's 3380 system.

Storage Technology said it expects to report a loss in the fourth quarter as well, but projects improved results in 1985.

Earlier this year, the company had predicted a profit for the fourth quarter.





# U.S. chip firm constructs R&D center in Japan

TOKYO — Applied Materials Japan, a wholly owned subsidiary of semiconductor equipment vendor Applied Materials, Inc. of Santa Clara, Calif., recently dedicated a new technology center here.

This technology center is said to be the first major research and development facility that has been established in Japan by an American semiconductor production systems manufacturer.

The \$9.2 million technology center, located near the Narita International Airport, was built with the aid of a \$3.4 million loan from the Japan Development Bank, reportedly the first such loan by the Japanese government

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agency to a company wholly owned by an American corporation.

# **Company commitment**

James C. Morgan, president of the California parent company, said the technology center reflects the company's commitment to the semiconductor industry in Janan.

According to Morgan, since forming the Japanese subsidiary, sales here have grown from \$2.4 million in 1979 to \$33 million in 1983, or about one-third of worldwide sales.

The company said the 57,000-sq-ft facility contains advanced equipment for processing semiconductor wafers.

# Beehive seeks help from court

SALT LAKE CITY — On Oct. 3, terminal equipment manufacturer Beehive International, Inc. filed for reorganization protection under Chapter 11 of the U.S. Bankruptcy Act following problems it had paying suppliers.

lems it had paying suppliers.

Warren B. Clifford, president and chief executive officer of the company, said the company was forced to seek court protection because the company's principal lender, Continental Illinois Bank, would not allow Beehive to use a \$2.5 million loan from another lender to pay suppliers.

Existing debts incurred from suppliers and current operating costs could not be met without additional financing, according to Clifford.

The company expects to continue operations under court protection and to market products introduced this year, Clifford said. It will also continue to provide maintenance services to its customers, he added.

In a move to reduce expenses, the company reduced its work force by 80 employees, or about 20%, and said it took other action to reduce other controllable expenses.





# PROGRAMMING IN DECISION TABLES

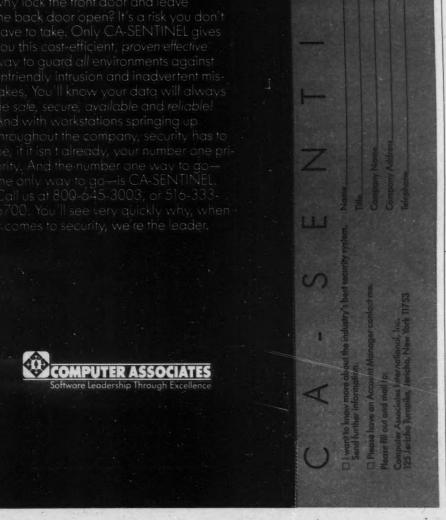
is a comprehensive and informative book, written in a crisp and clear style, with many examples and illustrations.

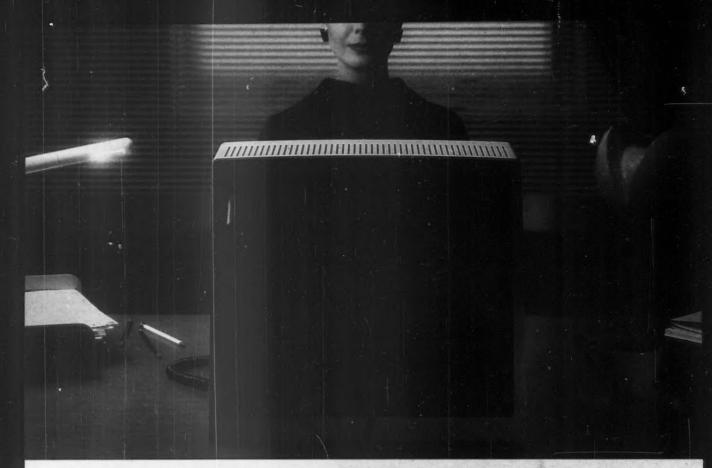
The programming language in the examples is COBOL. The methods described are well-tried, and easy to use.

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store up to three phone numbers and logon strings in the modem. Automatic answering is another feature of the modem, which is 212A compatible.

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# AT&T from page 107

to assume AT&T has a whole new set of products under development," Lowber said, adding that some of the 3B machines are actually seven years old.

Jonathan Fram, an analyst with Paine Webber Mitchell Hutchins, Inc., said AT&T's supposed advantage in the communications area could be preempted by advance ments in that area by established computer vendors. "AT&T does not have much of an advantage over companies like Digital Equipment Corp. and [Wang Laboratories, Inc.],"

In a recent interview, Robert J. Casale, recently appointed to head up strategy for AT&T Information Systems, said the company is "realizing our objectives in the 3B line." He believes that as a new product line, at least commercially, the AT&T ma chines are undergoing an evaluation process in the user community and that sales will pick up later this year and early next year.
But if machines that many people

consider to be high-priced and aged are just winning acceptance in early 1985, what is going to happen when new products from other vendors come on-line at the same time? 'There are going to be big changes in superminicomputers next year,

Lowber said. Theoretically, AT&T might be content to just show a presence in the higher end of the market while trying to clean up at a different lev-el, in what Casale pegged as the growth markets: micros, local-area networks and software. But such a selective strategy would not bring AT&T to the level of IBM, particularly in light of the doubts surrounding AT&T's Unix System V strategy

To ensure AT&T does not end up, in Casale's words, "an also ran, there has to be something more. The questions are: What is it? And when will AT&T drop it on the market?

# R&D from page 108

the legislation, forcing a conference committee to reconcile the differences. For example, House and Senate conferees compromised on the controversial issue of whether to award attorneys' fees to the prevailing party in an antitrust suit

The House version would have awarded attorneys' fees, but the Senate version dropped that provision at the behest of Sen. Howard M. Metzenbaum (D-Ohio), who feared it would discourage legitimate antitrust suits. In the compromise, attorneys' fees are awarded only if the judge finds that the plaintiff's claim or conduct is "frivolous, unreasonable, without foundation or in bad faith."



# REPORT from page 112

The report said the principal influence information processing and tele communications technology will have on services will come in the connection between processing net-works, such as automated teller machines. The data processing services and credit card industries have been able to perform many traditional bank functions by offering their telecommunications and information processing systems as gateways to new nonbank financial service providers that want to make use of their extensive in-place systems, the re-port said. "Communications will be the key to delivering financial services in the future," the report as-

A new technology that will affect financial services and will likely come on stream in the future is the increased processing power contained in large mainframes, the report predicted. Large mainframes will be needed to support applica-tions such as image processing for security checks and voice-initiated payment applications.

'Computer architectures will be increasingly modular. On the one hand, this will make it possible for users to configure systems to meet their specific requirements, while on the other, it will tend to increase system reliability and integrity," the re-

port said.

The report predicted that soft-ware costs will continue to climb because very few software develop-ment tools are presently on the market and financial firms over the years have already developed a huge body of proprietary software they

will continue to maintain.

The report said only the largest banks and data processing services with hardware and software already in place are actively maintaining processing of large numbers of financial transactions. Most banks' check proessing and account maintenance are

performed by outside providers.

The report noted, "Even though there is considerable inertia in the form of installed applications systems, new applications in the financial services industry will continue to evolve. In the near term, the emphasis will be on modifying batch applications to operate interactively, where it is reasonable to do so."

New software features, such as system security — a goal that was extensively supported in the the report — will be built into financial services products, the report said.

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It's amazing what can happen to curious and enterprising high tech professionals when given the opportunity to tap inner resources and make new discoveries. They simply excel. The possibilities for expansion and for career development are endless. You just have to look beyond the mind's eye to see them.

#### NETWORK:

#### **NCC Manager**

5 years Network Control experience in a large mainframe environment. Should be familiar with SDLC/BSC protocols, CICS, NCCF, VTAM/NCP, NPDA, NTO, INFO/MGT, 3270 family of terminals and DECNET. Should have end user rapport and proven organizational skills. Will manage a minimum of 10 people. The anticipated network expansion will provide a seasoned manager with the opportunity to build a Network Control Center of the future.

#### Network Technicians

2-3 years experience in operations network utilizing VTAM, NCP (NCCF, NPDA) and CICS MTO. We also seek individual experienced in telephone, modern and front-end processor circuit installation, as well as problem determination. Installation and cabling experience with digital and analog patch panel equipment is necessary. Successful candidate should be familiar with IBM protocols.

#### SOFTWARE:

#### **CICS Systems Programmer**

Successful candidate will be well versed in all aspects of CICS, SMP and MVS operating systems. Experience with BTAM and/or VTAM, plus good oral and written skills desired.

#### **MVS Systems Programmer**

Experience with MVS/SP or MVS/XA operating systems in a large environment required, as well as JES 2, TSO, MVS/EXITS and SMP. Software package installation/maintenance with IBM and OEM products experience also desired. Knowledge of 308X processors, 3350, 3380 DASD is beneficial. Finally, a proven ability to perform problem diagnosis and read dumps is necessary, as is user support experience.

#### **VTAM Systems Programmer**

Knowledge of VTAM/NCP architecture and protocols required, as well as NCP GEN process. Familiarity with SNA hardware, especially 3270 family of terminals and SDLC protocol. Problem determination and resolution a must. Ability to work well with others is important, as are good ver-bal and written communications skills.

If You Possess These Skills Insure Your Future By Calling Us At (201) 285-7110

Or forward your resume for immediate consideration to: Personnel Manager, Dept. 7, Crum & Forster Corporation, 305 Madison Avenue, Morristown, New Jersey 07960. An equal opportunity employer mt/tv/h.



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ENVIRONMENT consists of IBM 3084, 3081, and 4341 supporting large scale IMS development projects, scientific and business applications.

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## SYSTEMS PROGRAMMER

Position duties include VTAM and NCP GENS. Position also re s experience in system performance tuning

#### PLANNING AND CONTROL ANALYST

Position duties include the implementation and training of a systems development methodology package. The position requires 2-3 years experience in a computerized environ ment monitoring compliance with systems development standards with an emphasis on plan ning and control. Experience in the stradis development methodology is a strong plus.

#### **ANALYST PROGRAMMERS**

Position involves the development of various Business applications using COBOL or PL/1. Knowledge of IMS DB/DC and ADF is considered a plus. Large IBM OS/MVS experience

#### **ENGINEERING SYSTEMS ANALYSTS**

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DALLAS: DataPro Personnel Consultants 12720 Hillcrest, Suite 520 12720 Hitlcrest, Suite 520 Dallas, Texas 75230 (214) 661-8600

**DETROIT:** Electronic Systems Personnel, Inc. 3000 Town Center, Suite 2580 Southfield, Michigan 48075 (313) 353-5560

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LOS ANGELES: Superior Resources, Inc.

MILWAUKEE: EDP Consultants, Inc. 7332 West State Street, Suite 3 Milwaukee, Wisconsin 53213 (414) 475-0077

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a unifications: Bachelor's degree desir-Three to five years experience as a Data e Administrator preferably with a major Base Management System in a universi-nivornment. Must have excellent commu-tion skills and the ability to effectively in-ct with all levels of management.

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Wm. Max Ivey, Director Division of University Computing 144 Parker Hall Auburn University, AL 36849

ation Deadline: Nove Auburn University is an Equal Opportunity Employer

DATA SYSTEMS PROGRAM-MER/ANALYST III: State of Wyo-ming. Requires four (4) years ex-perience as a computer programmer Location: Location: Cheyenne. Salary Range; \$215-3329/month. Obtain and submit an official application form to Wyo-onling State Personnel Division, Emerson Bidg., Cheyenne, WY \$2002-0066, no later than Novem-ber 16, 1984.

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SR. PROGRAMMER ANALYST and SR. SYSTEMS ANALYST-Skystems analysis in an IBM environment and programming ON-LINE systems in COBOL, using OS/ICL CICS experience in analysis, design and programming of Order Entry and/or Marketing systems and related database experience a definite plus.

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Develop operating systems software for powerful modular work-stations and departmental processors. Experience developing sys-tems software for multi-processor servers and knowledge of UN-IX\*(C, PL/I) or PL/M, bus architectures desired.

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- Planning and Administration Qualified individuals are required in such areas as Capacity Planning, Security Planning, Training and Education, Hardware and Software Evaluation, EDP Auditing, Project Control, Standard Development and Maintenance.
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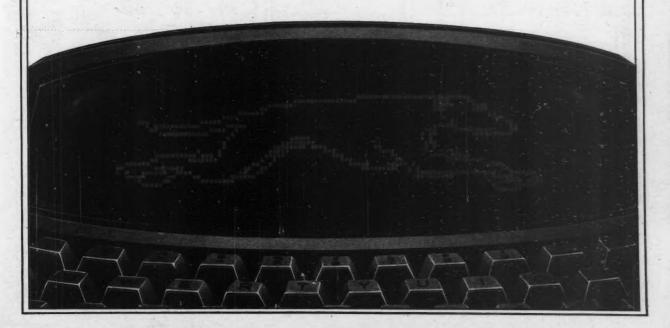
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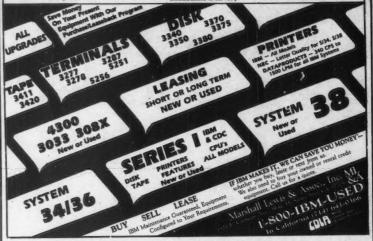
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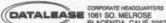
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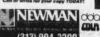
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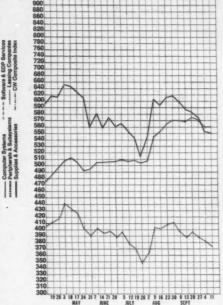
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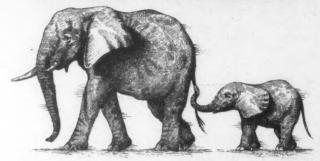
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	Districtor No.	THERE		

		1983-84 RAHOE (1)	CLOSS OCT LO 1984	MEET	NEEE PCT CHROS			EXUE.		1983-84 RANGE (1)	CLOSE 0CT 10 1984	MEER MET CHMGE	MEER PCT CHMGE
		TOTAL BOAT	THE REAL PROPERTY.						BOFTMA	RE & EDP 1	EBATCES		
	ALPHA RICHOSYSTERS	8- 24		+1	+12.5			0	ADVANCED COMP TECH	3- 8	2 3/4	- 1/4	-0.2
	ALTOS COMPUTER SYST	0- 21	B 1/B	+ 1/2	+9.7			10	ADVANCED SYSTEMS INC.	14- 22	12	+ 1/2	+3.0
	AMDAMA. COMP APPLE COMPUTER INC	10- 53	22 7/6	-1 7/8	-14.5			0	AGS COMPUTERS INC. AMERICAN SOFTWARE	13- 31	12 1/4	0 1/4	+6.5
	ATRE	15- 21	18 1/2	- 1/4	-1.3			16	AMACOMP INC	2- 10	2 3/9	0	0.0
i.	BURROUGHS CORP	44- 58	52	+ 7/8	+1.2			0	AMALYETS INTL CORP	5- 17	5 1/4	A 1/4	+5.0
	COMPAG COMPUTER CP	6- 15	4 1/4	+ 1/2	*13.3			8	APPLIED DATA RES	10- 27 0- 19	26 3/4	o 1/8	+21.4
	COMPUTER CONSOLES	9- 17 12- 28	5 1/2	- 1/0	-2.2			0	ASK COMPUTER SYSTEMS	12- 21	19: 7/8	4 7/8	45.8
ì	CONTROL BATA CORP	25- 82	30 1/8	+1 5/0	+5.7				ASTRADYNE COMP IND	1- 7	1 5/9	0	0.0
1	CONVERDENT TECHNOL	10- 41	11 1/4	-2 1/8	-15.0			16	COA COMPUTER ASSOC	30- 44 8- 17	33 3/4	- 1/4	40.8
	CRAY RESEARCH INC	14- 28	20 3/4	+ 1/2 + 3/4	+3.1			0	COMPUTER ASSOC INT'L	15- 35	16	- 1/4	-1-5
ï	DATA GENERAL CORP	27- 58	50 3/8	+1 3/0	12.8			0	COMPUTER HORIZONS	6- 20	2 3/4	+ 2/4	+15.0
:	DIGITAL EQUIPMENT	64-128	84 1/8	+3 1/2	+3.0				COMPUTER NETWORK COMPUTER SCIENCES	9- 11	7 1/4	+ 3/6	+8.4 -7.2
:	EECD INC	12- 16	13 3/8	0	0.0		1	0	COMPUTER TASK GROUP	12- 18	16 1/4	4 1/4	+1.5
ŧ.	ELECTRONIC ASSOC.	3- 15	4	- 2/4	-5.8			0	COMPUTER USAGE COMPUTERE SYSTEMS	6- 18	7 7/8	- 7/8	-10.0
	FLOATING POINT SYST FOXBORD	28- 47	30 1/2	- 3/8	-1.2			0	COMBERV CORP	1- 10	3 5/8	+ 1/4	+7.8
,	GENERAL AUTOMATION	7- 18	7 1/2	- 1/2				0	CORSHARE	2- 10	2 3/4	- 1/2	-6.0
	DMI QUUDO	24- 44	24 7/8	- 1/9	-0.5			10	CULLINET SOFTMARE CYCARE SYSTEMS INC	24~ 50 16~ 75	41	* 3/8	0.0
8	HARRIS CORP HEMLETT-PACKARS CO	22- 49	25 5/8	- S/8	+1.0				ELECTRONIC DATA BYRT	25- 46	45 7/8	- 2/8	-0.1
i.	HOMEYMELL INC	46- 69	53 3/9	-2 1/8				0	HOGAN SYSTEM INC	10- 27	10 1/2	-1	-0.0
	IN SYSTEMS INC	3- 14	2 1/8	* 5/8	+0.5			86	GENERAL ELECTRIC CO	36- 59	34 3/4	- 5/8	-1.1
2	ITT CORP	21- 47	2 8/8	+2 3/4				16	INFORMATICS GENERAL	15- 32	13 3/6	0.00	0.0
i.	NAV-COM THE .	13- 38	17 3/4	0 1/8	+0.7			a	INFORMATION SCIENCE	8- 17	8 1/4	0	, 0,0
	MANAGEMENT ASSIST	8- 28	27 1/2	-1	-2.5			0	INFOTRON SYSTEMS CP	6- 15	26 3/4	- 1/4	01.0
	MATSUSMITA ELECTADA ) MODULAR COMPUTER SYS	8- 16	86 3/4	-2 1/2				A	F001000	18- 31	25 7/8	-1	-3.7
i.	HOMANK DATA BCI	9- 17	11 3/4	-2 3/8	~16.6		1	0	COTUS DEVELOPMENT CF	15- 40	22 1/6	+ 7/8	+4.1
	HAT'L BEHICONDUCTOR	11- 20	13 3/8	- 1/8 + 7/8				0	HCT COMMUNICATIONS HHGT BCI AMER INC	0- 20	7 1/8	- 1/8	-1.1
2	HOL THE	17~ 38	17	-1 1/4			1	0	PATHEBATICAL REP CRP	6- 10		· 1/2	+6.6
ĸ	HCR	21- 34	23 7/8	+ 1/2	+2.1			0	HICON SYSTEMS INC	31- 50	33 3/4	91	43.4
4	PRIME COMPLIES THE	10- 37	19 1/4	- 1/4	-1.5			8	MICROPRO INT'L CP MONCHIX-WESER CP	3- 10 6- 22	2 7/8	+ 1/0	0.0
ä	SPERRY CORP	35- 50	23 3/4	- 1/9				0	HATTOHAL DATA CORP	9- 28	0 3/4	- 7/8	-9.0
0	STRATUS COMPUTER INC		0 3/4	+ 1/4				0	ON-LINE BOFTHARE INT	0- 29	6	-1	-14.5
9	TAMBEN COMPUTERS INC	15- 40 25- 62	25 3/4	01 1/4				0	PANSOPHIC SYSTEMS PLANNING RESEARCH	12- 21	11 1/2	- 1/6	-2.0
ö	TELEVIDED SYSTEMS	4- 41	4 1/8	+ 3/6	+10.0		1	0	POLICY NONT SYSTS CP	22- 35	24 3/4	-3 1/4	
ø.	TELNON CORP TENNO IMOTRUPIENTS	101-168	14 7/8	+9 3/6	-2.4			0	PROGRAMMING & SYS	4- 8	4 5/8	- 1/6	
7	MATERIAL CORP	19- 24	10 1/2	+ 1/8		100		0	REYMOLTS & REYMOLD	28- 33	30 1/4	+ 1/2	
0	VECTOR GRAPHICS INC	0- 5	1/4		-16.3			0	SHARES MEDICAL SYS?	23- 43	28 3/4	-1 1/8	-4.1
ĕ	MANG LAGE "S"	24- 42	25 1/4	-4 1/4	-3.0			0	SCIENTSFIC COMPUTERS	0- 10	12 374	- 1/2	0.1
ā.	HEROX COMP	35- 92	37 7/0	+ 3/6					SOFTWARE AG	10- 18	13 5/8	+ 9/8	
-				374			1	*	OCCEL	2- 17	10 1/8	- 1/4	
	LEA	SING COMPI	BBIN										
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2	CONDISCO INC	10- 42	11 1/2	+ 3/1					PERIPH	ERALS & SU	STETEMS.		
õ	CONTINENTAL INFO SYS	5- 15	9 3/4	- 9/1	-0.0								
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0	SOOTHE FINANCIAL CP	10- 22	20 3/8	~ 1/8	-0.8							
A	CHI CORP	4n 10	7 7/9	- 1/2	-1.5							
M.	CONDINCO INC	10- 42	11 1/2	4 3/8	+3.2			PERIPHE	MALS & SU	ASTETEMS		
0	CONTINENTAL INFO SYS	5- 15	9. 3/4	- 9/0	-0.0							
19	DRF INC	3- 17	15 3/8	+3 3/4	+12.0		P	APP [HTERMATIONAL	2- 7	3 1/8	- 1/8	- 10
9	PHOEMEN AMERICAN INC.	3- 17	2	~2 1/0	-31.0			ANDERSON JACOBSON	2- 26	4 3/4	- 7/8	-13
0	BELECTERN INC	11- 21	14	0	0.0		0	AUTO-TROL TECHNOLOGY	10- 20	10 3/4	0 1/0	40
11	U.S. LEASING	29- 44	33 3/8	-2 3/0	-6.8			AVANT-GARDE CONFUTNO	15- 20	20 1/4	+ 1/4	
							- 0	BANCTEC INC	5- 22	7 1/4	+ 1/2	
						1	A	BEENIVE INT'L	2- 13	3/6	~§ \$/\$	-27
		COMPONENT	8				16	BOLT-BERANEX & NEW		20	+ 1/4	- 0
							0	CAMBEK CORP	1- 3	2 3/6	0 1/0	46
- 90	ADVANCED RICRO DEV	29- 41	35 5/6	+5 1/8	+3.2	-	H	CENTRONICS BATA COMP	0- 28	8 3/4	- 3/8	-
0	ABUTS BENECONDUCTOR	10- 30	27 1/2	- 3/4	-4.1			CETEC COMP	7- 12	0 1/0	- 1/0	-
10	AMALOS DEVICES INC	29- 41 10- 30 20- 32 10- 31	22 3/4	45 1/4	+5.8		A	COGH! TROWICS	4- 20	4 1/4	- 3/6	-
0	AMALOGIC CORP	10- 31	10	* 1/4	+2.3							
80	persise magnetics or	9- 37 0- 12	B 1/2	+ 1/9	+1.3							
0	MADCO CORP	0- 12	7 1/2	-1 1/0								
0	PICRO PASK INC	10- 19	10 1/4	- 1/4								
80	TERADYME	23~ 39	25	+ 1/8	+0.5							
				-								
			ACIFICI 6									
	L+MATIONAL! N+HID	MESTI G-DU	ER-THE-CO	RBTHU								
0	-T-C PRICES ARE BID PR	ICES AS OF	3 P.R. 0	M LAST B	ID.							
	1) TO MEANEST BOLLAR											

		P010	Z	
X C	1982-94 RMGE	OCT 10	MEEK	HEER PET
н	657	1984	ЗЭМНЭ	CHANGE
D COMPUTER TRANSCEIVER	28- 40	1 1/2	~ 3/6	-7.6
N COMPUTERVISION CORP	29- 53	19 1/4	01 1/8	*2.0
A DATAPRODUCTS CORP	16- 32	15 1/2	-1 3/8	-8.1
O DATABAN CORP	6- 12 8- 41	6 1/9 8 1/2	- 3/8	-0.3
B BATUM ENC	9- 17	9	• 1/2	12.3
O DECISION BATA COMPUT	0- 18 3- 38	11 3/8	0	0.0
# SLECTPOWIE # A P	5- 11	6 1/2	+ 1/6 - 7/9	*2.7
D EMBATA. INC	0- 18	7 3/4	- 1/4	-0-1
D EVAME & SUTHERLAND B SAMBALF TECHNOLOGICS	8- 14	17 3/4	-1/6	-5.2
S OFN'L DATA COMM THO	10- 20	18 1/8	0 1/0	+0.8
N HAZELTINE CORP	18- 33	3 1/2	*1 3/6	0.0
O IMPORMATION INTL. INC.	10- 19	11	0	0.0
D INTECOM INC	7- 21	48	~ 1/8	-5.1
9 INTEL CORP	7- 19	20 1/4	- 3/0	-2.5
O MEDADATA CUMP -	0- 15	11 1/2	0	0.0
A MEI BATA CORP H MADELIA CORP	19- 29	23 1/9	- 2/8 +1 3/8	+3.4 +£.2
D METHORS SYSTEMS CORP	10- 34	20 7/8	- 1/8	-0.5
N NO AMERICAN PHILIPS N NORTHERN TELECON LTD	30- 40	25 1/2	- 3/8	-3.7
C OMEX	In B	1/8	. 0	-1.2
N PARADYME CORP	11- 58	12 1/2	+ 1/8	01.0
H PLEBSEY CO (ADR)	25- 44	11 3/8	- 3/4	-6.0 +2.2
8 PRINTRONIN INC	18- 34	19 3/4	- 3/8	-1.0
9 AMTES CORP 10 RECOGNITION EQUIP	8- 23	0 1/2	- 3/4	-10.2
M ROLE CORP	20- 80	68 2/3	45. 1/8	+5.7
N SAMBERS ASSOCIATES	38-120	42 1/2	+ 1/2 - 1/8	-33.2
8 SCAN-TRON CORP	9- 10	11		0.0
N SCIENTIFIC ATLANTA	9- 23	6 3/8	- 1/4	-2.0
	9- 20 9- 23	9 3/8	- 9/8 -4 3/8	-6.5
M STORMOE TECHNOLOGY O SYNES DATATRONICS	2- 13	2	- 5/8	-5.8
8 SYSTEMS & COMP TECH 8 7 SAR INC	20- 38	9 3/8	~ 1/2	-1.8
A TAB PRODUCTS CO	13- 20	19 1/4	~ 3/4	+4.8
O TAMBON CORP A TEC THC	2- 35 6- 12	9 3/4	- 1/2	-1.7
OF TERTRONER INC	92- 97	26	* 1/4	+0.4
N TELEX	2- 17	3 3/8	+ 9/8 - 3/8	-10.0
N TOMEPLEY INC	13- 22	17 1/8	0	0.0
O VISUAL TECHNOLOGY	3- 28	2 7/8	- 3/6	-17.8
BUP!	PLIES & MCC	ESSORIES		
II AMERICAN BUB PRODE	17- 23	22 3/8	- 5/4	-1.1
N GARRY MRIGHT A BUPLEX PRODUCTS INC	22- 23	28 3/8	- 1/8 • 1/9	-9.8
IS EMMIS BUS. PORMS	19- 28	23 1/9	+ 1/8	*0.4
B SH COMPANY B HOOPE CORP LTD	99- 90 39- 91	77 3/4	42 1/8	42.5
G STANDARD REGISTER	27- 42	30 3/4	- 5/6	10.0
N HALLACE COMP BERVIO	23- 33-	29 1/4	* 1/8	40.6

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